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USSR Report

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USSR REPORT

Economic Affairs

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ECONOMIC MODELING AND COMPUTER TECHNOLOGY APPLICATION

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ECONOMIC POLICY, ORGANIZATION, AND MANAGEMENT

BACHURIN ON COST ACCOUNTING AS AID TO ENTERPRISE INDEPENDENCE

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 12, Dec 85 pp 31-42

[Article by A. Bachurin, doctor of economic sciences: "Cost Accounting in the System of Managing the Economy"]

[Text] The draft on the new edition of the Program of the Communist Party of the Soviet Union substantiates the need for further development of cost accounting, an increase in its effectiveness, and a consistent conversion of enterprises and associations to full cost accounting while strengthening economic levers and reducing the number of indicators set by higher-ranking organizations. Under conditions of developed socialism, strengthening cost accounting is objectively necessitated by the economy's conversion to an intensive footing and by a greater orientation of socialist enterprises to achieving the best final results with minimum expenditures of labor and material resources. There is every reason to consider cost accounting one of the important economic levers for intensification of production and raising its efficiency. The significant role of cost accounting is widely treated in the economic literature. But it does not disclose all the functions of cost accounting in economic management, including planning, organization of labor and production, and development of collectivist production relations. The point is that cost accounting is a method of planned economic management and operates as an important element in the overall system of managing the national economy. All of its elements, including planning and cost accounting, are organically interrelated and actively interact in solving scientific-technical, economic, and social problems. In this situation the impact of cost accounting on production efficiency depends greatly on the quality of planning, streamlining the organizational structure of management, and developing collectivist forms of labor organization. In turn, strengthening cost accounting operates as a necessary condition for making the entire economic mechanism more effective.

In the 12th Five-Year Plan a new, integrated system of national economic management expected to ensure a fundamental acceleration of scientific-technical progress and comprehensive intensification of public production on the basis of multifaceted refinements in all elements of the economic mechanism is to be created. The principal feature of this system (as the results of experiments underway testify) is broadening the independence and increasing the economic accountability of production associations (and enterprises) for the quality of work and final results of their activity, in development of the creative

activism, economic initiative, and enterprise of labor collectives, and in strengthening their role in management and technical refinement of production. These challenges are met by consistent application of the principles of democratic centralism in planning and management, refining the organizational structure and reducing the levels of management, and introducing genuine cost accounting and collective forms of labor organization and stimulation at enterprises. There will be more comprehensive and purposeful refinement of all interrelated elements of economic mechanism in industry, agriculture, construction, transportation, and the service sphere with due regard for the distinctive features of the particular sectors.

But whatever these features may be, the general starting points of the integrated system of national economic management have already taken shape in practice and are becoming increasingly apparent. Paramount among them are development of democratic principles in management with a rational combination of these principles with refinement of centralized planned management of the economy, increasing the material interest and economic accountability of production associations (enterprises) in achieving optimal final results with minimum expenditures of all resources, introduction of full cost accounting at associations and large enterprises, and development of cost accounting relations between enterprises and the organizations that serve them.

The economic levers of cost accounting operate at full force here when the following principles are observed: correlation of the final results of economic activity with production expenditures and ensuring that production pays for itself; reimbursement of production costs and expenditures for the development and technical improvement of production through internal sources; following a system of economy measures in the use of production resources and attaining optimally necessary production profitability; material stimulation of working people for improving the quality and quantity indicators of labor; ensuring that personal economic interests coincide with the interests of the labor collective and society as a whole; and, economic accountability of the enterprise for fulfillment of its obligations to consumers and the state.

The conditions of full cost accounting insure comprehensive observance of the above-enumerated principles and also the operation of its levers and stimuli in all enterprise subdivisions, considering their peculiar features. Thanks to this cost accounting creates the necessary economic interest in improving the quality of work and increases the accountability of brigades, shops, and other enterprise subdivisions for improving the final result of the activity of the enterprise as a whole. The effectiveness of cost accounting is reduced when these principles are not fully observed or when they are not applied in all subdivisions of the production association (enterprise). Such incomplete cost accounting produces only a partial effect and generally needs to be bolstered.

To convert production associations (enterprises) to full cost accounting it is necessary to ensure: a correct combination of centralized methods of planning and management with the independence of labor collectives in the spheres of economic and financial activity; the application of economically substantiated prices and stable economic norms; optimization of enterprise size and

structure; introduction of collective forms of labor organization and stimulation; direct, stable links among enterprises; and, direct accounts with the state budget. Not all of these conditions were properly observed in earlier phases, which prevented full and consistent introduction of cost accounting in industry and other sectors of the economy. In many cases the economic accountability interests of enterprises were weakened because plans were out of balance and ratified assignments and economic norms were revised. Experience showed that only where the five-year plan is balanced can there be stable economic norms that guarantee an increase in resources left at the disposal of cost accounting enterprises depending on improvement in the final results of their activity.

Strengthening cost accounting together with raising the quality of national economic plans and improving their balance creates conditions for fuller utilization of reserves for intensifying production and raising its efficiency. In this case enterprises not only have greater interest in, but also greater economic accountability for the quality of work and production efficiency and a unity of the economic interests of labor collectives with the interests of society is achieved. Enterprises become more accountable in their relationships with one another and in fulfilling their obligations to the budget and to banks. They operate on equal cost accounting principles with their suppliers and consumers and are obligated to fulfill contract obligations strictly, not only with respect to the quantity and quality of the corresponding output, but also to its cost.

One of the most important tasks of cost accounting is to teach all administrative personnel to keep accurate records of expenditures of labor and material resources and measure them intelligently against the results obtained, in other words to live within their means.

Full cost accounting creates conditions for developing the economic thinking of working people, which is very important for intensification of the economy. As labor collectives become more deeply involved in the economy and keep closer track of labor productivity, prime cost, and production profitability they will be able to use the powers given to them to solve production problems in a proprietary manner and exercise a more vigorous influence on those managers who try to fulfill the plan without regard for expenditures, buy superfluous machinery and equipment, and permit losses and unproductive expenditures.

In posing the question of strengthening cost accounting today, the CPSU takes account of its active influence on the solicitous attitude toward public property and on instilling all working people with the feeling of being the proprietor and using production resources in a calculated, economical manner. Hero of Socialist Labor A. Kalinichenko, chairman of the Druzhba Narodov Kolkhoz, spoke very well in this connection about the role of cost accounting. The feeling of being a proprietor, he said, does not come by itself. It takes the proper soil, spiritual and material, for this feeling to come alive and develop. I classify cost accounting as this kind of soil; it is a system of economic and monetary accounts that demands that each worker be able to take account of his own labor, his own resources, liters of fuel, tons of

fertilizer, and quintals of grain and vegetables; under this system each kolkhoz member becomes an economist at his work position.

This is precisely the essence and significance of the problem. Therefore, we must use every means to strengthen cost accounting at the enterprises, introduce cost accounting principles in the brigades, and take them to each worker. Brigade cost accounting is needed so that each worker will in fact be a proprietor, constantly measure the expenditures of his own labor against results, and strive to increase his personal contribution and the contribution of the entire brigade collective to the common cause of raising the efficiency of public production.

The impact of cost accounting on improving the final result of enterprise activity is greatly amplified if all enterprise subdivisions (shops, sections, and brigades) have a uniform (start-to-finish) system of evaluation indicators and criteria that is aimed at increasing accountability for performance of obligations to consumers, improving output quality, and bolstering economy in expenditures. In this respect the experience of the Saransk Elektrovypryamitel Plant is instructive. Their main criterion of internal planning, which leads all subdivisions toward the common goal, is performance of contract obligations. The work of the facilities and shops that produce the final output is evaluated by shipping specific articles in conformity with orders. The semifinished parts facility is given assignments to supply the assembly shops and sections with the full assortment of parts necessary to produce articles strictly according to order. Brigade leaders are given ratified assignments for the brigade units necessary to create the final product. In this way fulfillment of the delivery plan is the first commandment of all enterprise subdivisions. The second key indicator is considered to be labor productivity. Shops, sections, and brigades are given assignments to reduce labor-intensiveness and the number of personnel. Technical re-equipping of the plant and rational organization of the brigade contract help perform these assignments. As a result they were able to release almost 1,000 working people in 1985.

All plant subdivisions in fact bear equal responsibility for improving the final result of economic activity. The uniform indicators for evaluating results and the material incentive system corresponding to these results promote this. This procedure makes it possible to fulfill contract obligations promptly and achieve high indicators of labor and production efficiency. For example, in the first quarter of 1985 when many industrial enterprises had interruption of production and did not fulfill their set assignments, the plant collective raised labor productivity 10.4 percent; 50 percent of this growth was obtained as the result of technical re-equipping and introduction of progressive technology, while about 30 percent came from revision of established norms, 11 percent from brigade labor organization, and 9 percent from better use of work time. The plan for 1985 envisioned reducing the prime cost of output by 4.1 percent, compared to 3 percent in 1984.*

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* EKONOMICHESKAYA GAZETA, No 22, 1985, pp 11-14.

The effectiveness of rational planning of appropriate indicators for particular subdivisions in combination with the collective form of labor organization and stimulation is also seen clearly in the results of the activity of the Leningrad Elektrosila Production Association. With annual growth of 8-10 percent in total production volume the average expenditure of metal is decreasing roughly 10 percent and labor productivity is rising by 8-10 percent. This is above all a result of systematic work on technical refinement of production and introducing progressive technologies. At the same time a great deal of attention is devoted to refining planning and raising the level of economic work at the plants of the association. They have a comprehensive plan for raising the level of economic work. Economic measures increase the accountability not just of plants, but also of shops, and production sections and brigades for the final result of activity, above all for delivery of output to consumers in a specific assortment. They have introduced a comprehensive system to manage growth in labor productivity. It envisions participation by specific production elements and auxiliary services to give the brigades the conditions they need to raise this figure. Concrete steps are being taken to improve labor and production organization, to plan and account for labor expenditures, to step up mechanization for the purpose of reducing expenditures of manual labor, and so on. The principles that have been developed stipulate that each brigade will ensure at least 70-80 percent of growth in labor productivity by introducing organizational-technical measures.

At the same time, many enterprises still employ understated labor norms which do not help strengthen cost accounting. A recently adopted decree contains a system of steps to put work on establishing labor norms in the national economy in order. It defines the procedure for checking all existing norms and replacing them during the period of certification of work positions. Material incentives for introducing technically substantiated labor norms have been increased. The sphere of application of labor norms is broadening. As a result the indicator of the labor-intensiveness of output is playing an increasing role in the economic mechanism.

During 1985-1986 plans envision checking all existing time (output) and service norms to bring them into line with the level of equipment and technology and with the requirement of brigade labor organization and payment. Consolidated norms for a full set of jobs, article, stage of construction, or completed project will be introduced. This should promote the organization of comprehensive brigades and help refine their payment by the final result.

The key objective of the measures under review is to introduce efficient labor norms not only for piece-rate workers but also for all other categories of working people. Without scientifically substantiated norm-setting for workers and designers and establishing norms for number of engineers and employees, it is difficult to achieve a rise in the quality of normative planning of the wages fund and use the objective measure of a savings in number of workers and employees achieved through growth in labor productivity. At the same time, this very method of planning creates conditions for widespread national economic use of the principle of labor payment by the final result of the activity of each labor collective and increases the effectiveness of the economic levers of cost accounting. It is also important to establish order in setting

various correction factors to the norms; they often operate as a loophole for a direct increase in wages.

Strengthening the role of the indicator of projected labor-intensity and economic measures to achieve it are envisioned in enterprise plans along with steps to bolster economic stimulation for broad introduction of progressive norms. In this way, straightening out norm-setting serves as an important prerequisite not only for improving the planning of labor and wages, but also for raising the effectiveness of cost accounting and its principles; furthermore, it promotes a greater role for brigade cost accounting in production intensification.

The introduction of brigade cost accounting is one of the main conditions for operation of the principles of full cost accounting at enterprises and production associations. The newspaper PRAVDA asked: "How should enterprises be converted to full cost accounting?" V. Pryakhin, general director of the Kaluzhskiy Turbinnyy Zavod Association,responded: "You must begin with brigade cost accounting. If you are not successful on the bottom level, there is no need to even think of the plant level." And indeed, the most important objective of cost accounting is to teach all workers to be real masters of production, to conserve the means and objects of labor, and to take an economically interested but at the same time an accountable attitude toward the results of the activity of the entire enterprise. If these principles are weakened, or even worse not observed, then no kind of cost accounting at the plant level is able to create the prerequisites for highly efficient collective labor. That is why the conversion of the large majority of the new type of brigades in industry, construction, and agriculture to cost accounting should be accelerated.

Brigade cost accounting is an organic part of enterprise cost accounting. It promotes collective solutions to production and social tasks and stronger organization and discipline. The mutual obligations of the administration and the cost accounting brigades are made up in the form of a contract or reflected in the labor "passport" of the enterprise. The results of brigade cost accounting activity are summarized each month and discussed by the brigade council or collective. Combining brigade cost accounting with contract principles of labor organization and stimulation creates an interest in timely performance of the established volume of work with fewer expenditures and on the proper quality level. The brigade collective is in a way guaranteed appropriate labor payment in cases of timely and good-quality performance of a complete volume of work (production of finished output, an assembly, a brigade unit). By the same token, economic measures intensify the interest in rational and economic use of the means of labor assigned to the brigade and the material resources appropriated by norm.

Cost accounting brigades often get by with fewer means of labor than are allocated to them under established norms. A considerable savings is also achieved in labor expenditures because the wage fund savings received as the result of raising labor productivity with the help of the labor participation factor is distributed among members of the brigade according to the amount and quality of their labor. The application of this factor has a much greater

impact if progressive norms that stimulate growth in labor productivity are employed. Comprehensive, technically substantiated norms which define expenditures of work time for a planning-accounting unit of the final result of the brigade's collective labor under rational organizational- technical production conditions meet this demand.

Normed time and job rates for the planning-accounting unit of brigade work are set by means of the unitary job authorization. It is given to the brigade for the entire volume of work being performed, and the wage payment is assigned for sets or assemblies actually made during the month using comprehensive job rates. The more quickly the assigned volume of work is done, the more the average wage of brigade members increases. This is the essential feature of the material interest of the brigade collective in the overall results of labor and in accelerating growth in labor productivity. But if we also consider that members of a cost accounting brigade receive bonuses for conservation of material resources and for work quality, then the overall orientation of brigade cost accounting to intensive methods of economic management becomes more apparent. For example, at the Kokhtla-Yarve Slantsekhim Production Association the establishment of comprehensive brigades with labor payment according to a unitary job authorization, application of the labor participation factor, and bonus payments for quality indicators of work was a major reason for successful performance of the brigade five-year plan.* The accountability of each member for the reliability of newly installed equipment rose. The effort to fulfill plan assignments on time and well with fewer personnel intensified. The cost accounting brigades make heightened demands of the administration of enterprises and of engineering-technical personnel. All the association services are becoming more accountable for prompt and quality preparation of production and precise organization of material-technical support for the work being done. Considering this circumstance, many associations and enterprises began to make the bonuses of foremen and engineering-technical personnel dependent on creating appropriate conditions for rhythmic and efficient work by cost accounting brigades. The enterprises which have been converted to the contract principle of labor payment considering the final result of the activity of each labor collective are creating an even more effective mechanism for cost accounting economic interest and accountability. At these enterprises the framework of collectivist principles in differentiation of labor payment by the actually achieved final result of activity are being broadened significantly. Everyone from the ordinary worker to the enterprise manager is becoming equally accountable economically for the quality of work and results achieved. This approach to distribution of the wage fund earned by the labor collective seems fair and promising to us. It corresponds completely to the socialist principle of distribution of material and nonmaterial benefits according to labor and to the collectivist nature of socialist production relations.

Cost accounting is a comprehensive economic mechanism. Plan assignments and progressive norms and standards established by state organs interact vigorously in it with the independent activity of enterprises in using economic levers

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* See EKONOMICHESKAYA GAZETA, No 28, 1985.

and stimuli to achieve the optimal final result with minimal expenditures. Use value in combination with value forms of measuring the expenditures and results of production occupy important places in the system of economic categories of the cost accounting enterprise.

Cost accounting helps overcome contradictions between use value and value. This is accomplished by planned management of the production and distribution of use values, stimulating an improvement in the quality of output and services by economic measures, strengthening contract relations with consumers, and intensifying their influence to improve the assortment and quality of the articles being produced. The physical proportions and balances, which also determine cost proportions, are decisive on this level.

Planned organization of the economic and financial activity of socialist enterprises is supported on the basis of centralized planned management by deciding future problems of the development and technical refinement of production with due regard for the needs and interests of the entire society and the planned management activity of the enterprises themselves aimed at efficient use of the production capital and resources put at their disposal. In this case the value categories such as price, wages, and profit perform a number of functions in the plan-organized activity of the cost accounting enterprise. They serve as a means of: accounting and measuring expenditures and results received; economic stimulation of highly productive labor; improving the quality of output and reducing production costs; and distributing the revenue and gross income received from sale of output or services with due regard for personal, collective, and national economic interests. The socialist principle of material interest is realized on the basis of plan-organized use of the monetary form of labor payment and enterprise profit, while personal and collective cost accounting interests operate in unity with national interests. This unity is manifested in the rise in the national economic socioeconomic efficiency of public production, which reflects both a cost accounting benefit and a national benefit. Under socialism the principle in operation is: that which is beneficial to society should also be beneficial to the cost accounting enterprise.

Many years of practice have affirmed the effectiveness of centralized regulation of prices and the basic wage payment (salary system) and of the key economic norms that determine distribution of the enterprise's gross income and profit. For example, with the broad cost accounting rights given on an experimental basis to AvtoVAZ [possibly Production Association of the Volga Automotive Plant], the total amount of its gross income and profit is regulated by state wholesale prices for the motor vehicles produced and distribution of profit to appropriate funds within the association and the amount of its payments to the budget are determined by stable norms ratified by the ministry. The initiative and interest of labor collectives in working out an optimally intensive plan for production and sale (including export) of cars, improving their quality, raising labor productivity, and reducing the prime cost of output develop within the framework of a limited number of indicators ratified from above, socially necessary expenditures (defined in the price), and stable economic norms. This association is consistently realizing the most important principles of full cost accounting.

In his speech at the meeting of the CPSU Central Committee with veterans of the Stakhanovite movement, M. S. Gorbachev emphasized that the AvtoVAZ acceleration was to a significant degree based on experience with all-encompassing cost accounting -- from the enterprise to each brigade and to each work position. This is a worthy response to the party appeal to put all reserves in the service of the national economy and sets an example of the proprietary attitude toward work. With prices set by the state the profit of AvtoVAZ is growing as a result of raising labor productivity while maintaining an optimal ratio between it and growth in average wages of working people, reducing the prime cost of motor vehicles, and improving their use features. The following progressive trends attract attention under these conditions. In the 12th Five-Year Plan AvtoVAZ has, for the first time in its experience, set the task not only of refusing to accept new working people, but also of reducing the existing number of workers and employees by 1,300. They envision conserving eighty kilograms of metal on each new vehicle, reducing the average expenditure of heat, and conserving electricity and thermal energy. The association has requested that its heightened socialist obligations be included in the five-year plan, because it has an economic interest in increasing production. A great deal of work is being done to introduce cost accounting in all production, technical, and service subdivisions. Steps are being taken to increase the effectiveness of economic stimuli for timely updating of vehicles that are produced and making them more competitive in the world market.* All of this illustrates that the experiment at AvtoVAZ fits the policy of developing democratic centralism in management and planning and unleashing the economic initiative and independence of associations and enterprises. The broadening of democratic principles in management is combined with orienting centralized planned management to resolving long-run scientific-technical and economic problems and balancing production with public needs. The future will show what refinements must be made in the AvtoVAZ experiment and others like it. But it is already possible to say that the measures begun at production associations are economically expedient. To broaden such experiments and make them more effective work must be continued to concentrate production, refine the organizational structure of existing and newly organized production associations, and strengthen the plant sector of science, as envisioned by the decree of the CPSU Central Committee and USSR Council of Ministers on the development and technical re-equipping of machine building. In addition it is important to refine the economic norms and criteria used to evaluate the qualitative indicators of work. Special demands are made of price formation; state wholesale prices have a growing role in stimulating technical progress and the production of high-quality output.

One of the challenges of comprehensive refinement of the economic mechanism at the level of the production associations (enterprises) is further strengthening the link between the plan and the cost accounting. This can be accomplished by improving the quality of five-year planning, strengthening the role of the five-year plan in the activity of each enterprise, bolstering contract relations and stable direct economic links between the producers and consumers of output, and also creating the organizational and economic prerequisites for

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* IZVESTIYA 27 July 1985.

introducing the principles of full cost accounting in the sectors of material production.

The broad-scale economic experiment is greatly intensifying attention to growth in labor productivity and reducing the prime cost of output. The main things in the new economic mechanism are creating conditions in which initiative and independence can be manifested in prudent, economical management and orienting the plan and cost accounting in general to raising production efficiency. Thus, the collective of the Sumy Machine Building Science-Production Association imeni M. V. Frunze took on these obligations: produce additional (beyond control figures) output worth 136 million rubles before the end of the upcoming five-year plan; reduce expenditure norms and conserve 18,000 tons of ferrous metal, 30 million kilowatt-hours of electricity, and 11,000 tons of standard fuel through no-waste and resource-conserving technologies; receive 15 million rubles of additional profit. This will be accomplished while updating at least 70 percent of the output being produced, incorporating 98 pilot models of new lines and units with a higher level of factory readiness, and organizing series production of 62 types of new, progressive equipment.*

In the past when a certain enterprise's plan envisioned an increase in the production of new equipment, there could not be any question of an additional increase in the plan for reducing prime cost. Today, as we see, the situation has changed greatly. The fact is that the workers and engineering-technical personnel of the Sumy Association, having an economic interest in production growth and raising productivity, improving the quality of output, and reducing its prime cost, for the first time held thorough discussions in the brigades, shops, and divisions concerning existing opportunities to put production reserves into use and increase production efficiency. In support of the similar initiative of the collective at AvtoVAZ, they came forward with a fully substantiated proposal to increase the most important indicators of the five-year plan.

In this way there is a real economic interest for the enterprises themselves to increase their plan assignments. At the same time, under conditions of plan-organized full cost accounting the price, prime cost, and profit (where they are reasonably combined with physical indicators and stable economic norms) begin to have a better impact on technical progress and raising production efficiency. This is illustrated by the work of many enterprises which have converted to conditions of the economic experiment. When compiling the plan of the 12th Five-Year Plan their economic interest in broadening the production of efficient new equipment, technical re-equipping of production, and improving the quality of output produced rose. For example, the Uralmash Production Association set the task of achieving a situation where all output produced that is subject to certification meets the requirements of the top quality category by 1990. Up to 60 percent of capital invested will be directed to technical re-equipping of production. Plans call for reducing the labor-intensiveness of articles by 30 percent, freeing more than 3,000 persons, and significantly reducing expenditures of manual labor.**

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* PRAVDA 2 August 1985.

** PRAVDA 5 August 1985.

All this illustrates that scientific-production and production associations and large enterprises in machine building are capable independently, and with proper cost accounting accountability, of successfully meeting the challenges of technical re-equipping of production, expanding the production of complex new, efficient output, and at the same time improving the economic indicators of management activity on the basis of strengthening cost accounting and making economic levers and stimuli more effective. Considering this, the party and government are attaching special importance to refining the management of machine building production. Steps are being taken to expand production and science-production associations, include most of the sectorial scientific research institutes and design organizations in them, and strengthen the plant sector of science. This will provide an opportunity to make cost accounting even more important in the primary element of material production and to ensure vigorous interaction of the principles of the independence and accountability of production associations (enterprises) in organizing economic activity.

The conversion of the production organization to full cost accounting is based on improving the quality of five-year planning, introducing stable economic norms, and broadening independence in the distribution of profit, including the development and technical refinement of production and additional labor payment. This system for planning stimulation is very promising under conditions of large-scale production. But the AvtoVAZ experiment as well as the experiment at the Sumy Machine Building Science-Production Association imeni M. V. Frunze, which is based on forming economic stimulation funds directly dependent on growth of profit, do have problems which cannot be solved in the same way for all industrial enterprises. Increasing the capital spent for production development and additional labor payment to working people depending on growth of profit will produce the desired effect if all this growth is truly provided by the labor collective. This is possible if state plan discipline is precisely observed without preferring "advantageous" orders, and where prices for new articles are set on a centralized basis according to the level of socially necessary expenditures and improvement in the use value of the article. As the operating experience of enterprises that produce large assortments of goods shows, changes in profit do not by any means always reflect real improvement in the final result of production. The impact of structual changes made with the one aim of higher profit while underestimating use value and quality and failure to observe these requirements precisely when establishing prices for new articles is being reflected. In addition, stable growth in profit does not occur in a number of sectors because of objective reasons (extracting sectors, seasonal sectors, and the like). herefore, alternatives to the AvtoVAZ and Sumy Association experiment are needed with respect to profit distribution. In our opinion, the profit distribution procedure where profit acts as the source of formation of economic stimulation funds according to stable norms set depending on change in the indicators of work efficiency and quality with due regard for the specific features of the particular sectors can become more widespread.

The second problem relates to regulating growth in the average wage payment to workers, engineering-technical personnel, and employees with due regard for the actual contribution of the labor collective to raising production

efficiency. This problem can be solved by employing a maximum normative ratio between growth in labor productivity and average wage payment. But there are many difficulties here, especially in the manufacturing sectors with many different material expenditures in the price of a unit of output. In such sectors establishing the norm of the basic labor payment per ruble of commodity output in many cases leads to unjustified diversion of growth in the wages fund from the true labor efforts of the production collectives. Such deviations are smaller when the indicator of normative net output is used. But this indicator needs to be refined. As for the possibility of using the indicator of calculated net output (the enterprise wholesale price minus material expenditures) to plan the wages fund, in our opinion it would be wiser to use it in planning and accounting for production efficiency. The movement of this indicator reflects conservation of live and embodied labor. But it depends greatly on changes in the amount of profit in the price of output and on changes in assortment; it may fluctuate significantly because of differences in the profitability levels of articles. Speaking of these circumstances in his time, V. V. Novozhilov wrote as follows: "Net product depends on the conditions of application of labor: its technical support, the quality of natural resources used, location, and other factors. Therefore, labor payment according to net output would violate the principle of distribution according to quantity and quality of labor. This means that distribution according to labor presupposes reducing the net output of each producer to identical conditions of application of labor, that is, a calculation as the result of which labor that is identical in quantity and quality would produce identical calculated net output under any necessary (within the framework of optimal plan) production conditions."*

The question of the base indicator for normative planning of the wages fund is one of the complex issues of the economic mechanism. In construction, for example, the norm of labor payment is set per ruble of value of construction-installation work. It would seem to be better than ratifying an absolute wage fund, which often is not formed according to just desserts. But the norm is not without sin either. It does not remove the problem of incentive for jobs with relatively high expenditures of material resources. Construction workers and planners should look for a more acceptable indicator for planning labor productivity and the wages fund. Considering these problems, it is advisable to use a maximum (differentiated by sector) normative ratio between growth in labor productivity and increase in the average wages of workers and employees in planning.

The work being done in the country to establish an integrated system of economic activity and management includes the problem of improving the use of the finance-credit mechanism. The challenge above all is to strengthen the influences of finance and credit on intensification of production and raising its efficiency. Finance-credit levers should become an important means of carrying out economy measures in the national economy and ensuring the principles of full cost accounting. Further use of these levers is expected to actively

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* V. V. Novozhilov, "Izmereniye zatrat i rezultatov" [Measurement of Expenditures and Results], Moscow, "Ekonomika", 1967, p 38.

promote a reduction in expenditures of live and embodied labor per unit of output and an improvement in the final results of economic activity. For this purpose we should refine the practices used in distributing enterprise income, increase the share of credit in the total volume of national economic financing, and strengthen ruble control over efficient use of production capital and captital investment.

The finance-credit mechanism still does not adequately promote accelerated scientific-technical progress, restructuring of investment and structural policy, and more correctly combining centralized and decentralized principles in all planning and management activity. While showing necessary concern for balancing state income and expenditure and the personal monetary income and expenditures of the population, financial organs and banks should at the same time do everything possible to promote fulfillment of plans, introduction of the principles of full cost accounting at enterprises, and unconditional observation of the rights given to associations and enterprises in the area of economic and financial activity.

The solutions to these problems are envisioned in the draft Basic Directions of Economic and Social Development of the USSR for 1986-1990 and the Period until 2000. This document points to the need to "consistently refine and develop democratic centralism in national economic management. Democratic centralism combines unified centralized management with initiative, creative activism, and high accountability at all levels of the national economy. Involve working people in production management more broadly."* The initiative of labor collectives must be increasingly directed to accelerating scientific-technical progress, improving the quality of output, and maximally satisfying the needs of society with minimum expenditures of labor and material resources per unit of output. The measures being undertaken by the party and government to introduce genuine cost accounting at industrial associations and enterprises, kolkhozes and sobhozes, transport enterprises, construction organizations, and the service sphere aim at this goal.

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* PRAVDA 9 November 1985

INVESTMENT, PRICES, BUDGET, AND FINANCE

FIXED CAPITAL UTILIZATION, REPLACEMENT REEXAMINED

Improve Use of Capital, Output-Capital Ratio

Moscow AGITATOR in Russian No 2, Jan 86 pp 12-14

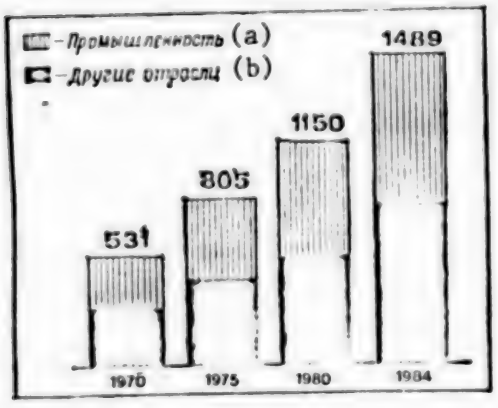
[Article by T. Gusev: "Use Fixed Capital Better"]

[Text] The first weeks of the first year of the new 12th Five-Year Plan are here. Its tasks, clearly formulated by the party in pre-Congress documents, are great and complex. While reinforcing and elaborating the positive changes that have taken place recently in the national economy, and indeed in all spheres of the life of society, it is essential to accelerate the country's socioeconomic development. And the new challenges can and must be met only by all-out intensification of production and raising its efficiency.

This means above all raising labor productivity, improving output quality, and reducing the materials-intensiveness of output. Along with this there is an increasingly critical need to make better use of fixed production capital, that is, the machinery, equipment, and other means of production which, unlike raw and processed materials and fuel, function for extended periods of time.

The diagram below shows that our national economy's fixed production capital is growing rapidly. As a proportion of national wealth (without the value of land, underground resources, and forests) it rose from 38 percent in 1970 to

Growth of Fixed Production Capital of the USSR Economy
(at year's end; in 1973 prices, billions of rubles)



Key: (a) Industry;
(b) Other Sectors.

44 percent in 1984. Fixed capital is growing much faster than the number of persons employed. As a result, the provision of fixed capital on the average per worker, in other words, the capital-labor ratio, is rising. For industry as a whole in monetary terms it rose almost 2.5 times between 1970 and 1984 to a level of 19,000 rubles. In public agriculture during the same period it rose almost 3.3 times to a figure of 11,900 rubles (including the value of livestock and long-term plantings) by the end of 1984. It is precisely this process, needless to say in compbination with higher qualifications among employed persons, better organization of their labor, and stronger discipline and order, which brings about growth in labor productivity. It is also quite important that the rise in the capital-labor ratio generally improves working conditions and makes labor less physically demanding and more attractive.

We know, however. that comparison reveals everything. If national income and output grow more rapidly than the value of fixed capital, it means that the return from capital, from each ruble, which means the output-capital ratio, is rising with the obvious benefit to society. If they rise at the same rate, then the output-capital ratio will remain unchanged.

The worst thing for society, however, is where the output-capital ratio drops, and this is exactly what has been happening for a number of years. For the national economy as a whole fixed production capital grew 2.8 times between 1970 and 1984 while national income produced increased 88 percent, in other words to a much lesser degree. In this same time period in industry fixed capital grew by more than 2.8 times while output rose less than 2.1 times, and in public agriculture the corresponding figures were 3.1 and 1.3 times.

There is, as we see, an enormous gap. Production growth must be secured at a high price, by considerably faster growth in fixed capital. And accordingly, this limits and retards growth in expenditures for housing and sociocultural construction. If it were not for the decline in the output-capital ratio, the state could spend much more on construction of projects to directly benefit people with the same volume of capital investment and no harm to production. Or, by investing the same capital in fixed production capital it could receive much more output that is received today, including consumer goods. For example, if the output-capital ratio in industry were raised by just one percent it would be possible to produce more than 8 billion rubles worth of additional output in a year with the same fixed capital.

The decline in output-capital ratio is in part the result of objective factors: a number of bad harvest years; the fact that raw materials and fuel have to be recovered from increasing depths and transported growing distances to consumers. To some degree this is also influenced by the fact that recently, in the interests of the present and future generations, it has been necessary to significantly increase the fixed capital that produces no increase in output at all, but rather is designed to protect the environment against harmful production influences.

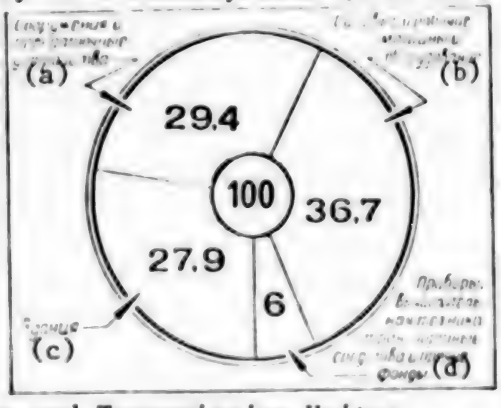
These are not, however, the main thing -- the numerous mistakes and shortcomings. Growth in the number of jobs in our country passed the really available work force. Projects were built at great cost, but many of them could not be

provided with labor (and sometimes also material) resources for full, intensive use, to say nothing of two-shift work. And many existing enterprises too have slackened attention to output-capital ratio problems, accumulate superfluous machinery and other fixed capital without need, and use it poorly or simply keep it on hand "just in case."

This situation cannot be tolerated. The decline in the output-capital ratio is having an increasingly strong, and negative, impact on production efficiency in general, eating up, so to speak, a significant part of the effect from raising labor productivity and reducing the materials-intensiveness of output. Concern about this was reflected in the pre-Congress documents produced by the party. In the draft of the new edition of the CPSU Program it says: "The efficiency of scientific-technical progress depends not only on increasing the production of the latest technology, but also on better use of fixed capital, increasing the production of output from each unit of equipment, from each square meter of production area. The existing tendency of the output-capital ratio to decline must be stopped, and in the future it must be made to rise."

The draft "Basic Direction of Economic and Social Development of the USSR for 1986-1990 and until the Year 2000" contains corresponding instructions. It poses the tasks of improving the use of fixed production capital, ensuring full loading of capacities and equipment, and raising the output-capital ratio. An especially critical issue is the reserve of raising the shift coefficient of equipment work. It is very low in a number of sectors today, and as a result the production of output is correspondingly low from existing fixed capital. According to recent figures, at plants of the six major machine building ministries this coefficient ranges from 1.31 to 1.49. In other words, the buildings, equipment, and other capital are not even being used for 1.5 shifts, which is very wasteful. In the current five-year plan the shift coefficient is to be raised significantly, bringing it to 1.6-1.8 in machine building in 1990; this includes 1.9 for equipment with programmed control and automatic lines and 2-2.5 for flexible production modules and systems.

Structure of the Value of Fixed Production Capital in all Industry on 1 January 1985 (% of total)



Key: (a) Structures and Transmission Units;
(b) Power-Supply and Working Machines and Equipment;
(c) Buildings;
(d) Instruments, Computer Equipment, Means of Transportation, and Other Capital.

Radical centralized measures have been envisioned to improve matters. Unwise growth in fixed capital, which is doomed to low return, is to be stopped. For this purpose it has been decided in the future to begin construction of production sites only when the production capacities of existing enterprises are being fully used and the regions of the proposed construction have labor resources available. Furthermore, the cost of construction per unit of capacity put into use is to be lower, which should also slow down the growth of fixed capital and, therefore, help stop the decline in the output-capital ratio.

It has been decided to direct capital investment primarily to reconstruction and technical re-equipping of existing enterprises. Already in 1986 expenditures for these purposes will increase by 23 percent, while their share of all expenditures for production construction will increase from one-third in the 11th Five-Year Plan to 40 percent. Later it is to be raised to one-half. Technical re-equipping and reconstruction of existing enterprises have a number of advantages over building new enterprises. One of them is that renovated old enterprises, unlike new ones, do not require additional employees who, under current demographic conditions in the country simply cannot be found in many, if not most regions. On the contrary, technical updating of production frees some of the people to form a stronger, if not complete, second shift. Where there are adequate material resources this can greatly increase the output-capital ratio.

The decision to accelerate the updating of production equipment, above all by faster replacement of inefficient equipment with progressive, highly productive equipment, serves the same purpose. Plans envision a general inventory of fixed production capital, updating more than one-third of its active part (machinery, equipment, instruments, and the like), and increasing withdrawal of obsolete fixed capital by more than two times in comparison with the last five-year plan. The 1986 plan also contains specific assignments on this.

While talking about these centralized measures, agitation activists should at the same time devote special attention to the tasks of their own collectives with due regard for their specific features.

The work of many organizations engaged in construction and reconstruction of production facilities needs serious improvement. It is time for all of them to learn how to follow normative timetables and estimates and to ensure proper work quality. The value and dynamic of the output-capital ratio in the future depend greatly on how well construction and installation workers do their jobs.

Machine builders will have to handle stepped-up assignments for increasing the production of more sophisticated equipment for new and renovated enterprises, support technical progress in all economic sectors, and lower production costs per unit of productivity of machinery and equipment. This last circumstance is very important. After all, the effect of even really good new machines is often eaten up by their unreasonably high prime cost and, therefore, price. The output-capital ratio of the consumer after buying and installing such machines goes down, not up. In fact, this very circumstance is one of the fundamental causes of the decline in the output-capital ratio in industry and other sectors. This means that things must be organized so that new equipment is cheaper per unit of use effect than earlier equipment, not more expensive.

Where this condition occurs it produces a rise in both labor productivity and the output-capital ratio.

The paramount task of collectives at new or reconstructed installations, shops, and enterprises is to reach projected capacity as quickly as possible. Every ruble of public capital invested in new fixed capital should begin to yield output needed by the people and the country at the scheduled time or ahead of it.

As a rule, fixed capital increases because of technical re-equipping at long-operating enterprises also. To increase the output-capital ratio there the production of output must grow even faster. Or, the same thing applicable to each work position -- labor productivity must rise faster than the labor-capital ratio. There are many different ways to do this. The most elementary is not to allow equipment downtime caused by violations of labor discipline, breakage, injury, poor organization, and carelessness. All equipment should be at work from first bell to last, as they say, and operate at full capacity, with a full load.

A great deal depends on the skills and diligence of the workers, on their ability and desire to master new equipment and technology and new output fast and to work under speeded-up conditions or with larger service zones. Combining occupations and operating multiple machines also produce a substantial impact because, by freeing some of the people, they help form second shifts (and in some sectors even third shifts), which are essential for a real turning point in the output-capital ratio.

Workers, engineers, and specialists can also do a great deal by proprietary participation in production control. It is certainly no secret that the output-capital ratio is being pulled backwards at many enterprises by expensive but empty production areas, equipment that has been bought and not installed or installed but long out of action and made unnecessary with new output or technology, and obsolete machines which eat up money for repairs more than they contribute to the work. All these things should be disclosed by the proprietary eye during the certification and rationalization of worker positions being conducted at the enterprises. When found the alarm should be sounded, public opinion in the collective shaped, and everything that is not needed should be sold outside or at least written off so that production areas can be filled with highly efficient machines that are truly needed for the work. And of course, a proprietary influence must be brought to bear on those particular equipment operators, repairmen, power supply workers, supply workers, or, perhaps, batching personnel whose carelessness caused the downtime or poor use of equipment.

The collectives of several leading Moscow enterprises have come forward with an initiative to improve the use of fixed production capital in the 12th Five-Year Plan. Having calculated their reserves and their possibilities, the working people of the Automatic Line Plan imeni 50-Letiya SSSR obligated themselves to raise the output-capital ratio by 10 percent, while the collective of the Kuntsevo Platinum Needle Plant by 15 percent, the Second Clock

Plant by 24 percent, and the Silk Combine imeni P. P. Shcherbakov by 33 percent. Under conditions of widespread socialist competition today in honor of the forthcoming 27th party congress, the collective search for reserves is going forward everywhere. May it inspire everyone and help all people raise production efficiency, including the output-capital ratio.

Reproduction, Replacement of Fixed Capital Discussed

Moscow EKONOMICHESKIYE NAUKI in Russian No 10, Oct 85 pp 47-51

[Article by O. Faizova, candidate of economic sciences, Leningrad: "The Accumulation Process and Updating Fixed Capital"]

[Text] The question of the rate and proportions of accumulation and withdrawal of fixed production capital is a key question in the theory and practice of expanded socialist reproduction. Under contemporary conditions with the task of attaining a qualitatively new state of society, it becomes paramount to update production, to re-equip all sectors of the national economy on the basis of contemporary scientific-technical advances.[1] Fundamental changes in the scientific-technical level of production are the key condition for accelerating the conversion of production to the primarily intensive path of development. This point was fully revealed and thoroughly analyzed in Comrade M. S. Gorbachev's report at the CPSU Central Committee meeting on questions of accelerating scientific-technical progress, held in June 1985.

Technical progress as the basis for replacement and updating of production capital is inseparably linked with the accumulation process. "To expand production ('accumulate' in the categorical meaning of the word)," V. I. Lenin wrote, "it is essential at first to produce the means of production."[2] Accumulation influences the rate and scale of replacement of wornout and obsolete means of labor with new ones. With a strained balance of means of labor all the needs for expanding and replacing fixed capital cannot be met, and as a result even physically wornout elements of fixed capital are not replaced with new ones at the proper time and the service lives of capital are extended by partial restoration through capital repair. "As a result of the growing age of the production apparatus the repair sphere has become bloated,"[3] in effect causing irrational expenditures of capital.

Developed socialist society today has a powerful production apparatus that ensures a high level of technical equipment for labor. The scale of accumlation has also grown substantially. Thus, in the period 1940-1983 the fixed production capital of the USSR economy increased 19.5 times to 1,403 billion rubles at the start of 1984.[4] The volume of capital investment in the national economy and the number of new models of machinery, equipment, and instruments built grow from five-year plan to five-year plan. In 1983 3,600 new types of output were incorporated in production and series production of 3,100 types was begun.[5] But the scale of production of new machinery and equipment today still does not meet the requirements of the economy for timely replacement of wornout and obsolete means of labor with new, progressive models. As the

April 1985 Plenum of the CPSU Central Committee observed, "The coefficient of updating of fixed capital has declined in the recent period. A paramount concern in the 12th Five-Year Plan should be substantially raising the coefficient of equipment replacement."[6]

Expanded reproduction of fixed capital depends in large part on the extent of accumulation. And with respect to updating fixed capital, this is done both out of accumulation and by replacing withdrawn capital. Therefore, the fixed capital put into use out of accumulation ensures both updating and expende reproduction of this capital. The updating process under conditions of simple reproduction is accomplished on the basis of the fixed capital used to replace withdrawn capital. But inasmuch as withdrawn capital is replaced by new, more efficient capital, its qualitative features change.

Updating, both by accumulation and as the result of replacing withdrawn fixed capital, is a means of intensifying production and raising its efficiency. And it is precisely accumulation that creates the right conditions for intensive updating of fixed capital, and this is its leading role in accelerating the intensification of socialist production.

If the withdrawal of fixed capital alone increases while volume of introduction is unchanged in the same periods of time, accumulation decreases because there is no source for its growth. Therefore the withdrawal of fixed capital also has certain limits, because it leads to a narrowed version of reproduction of fixed capital.

If the introduction and accumulation of fixed capital increase while the volume of withdrawal remains unchanged in the same periods of time, there is rapid increase in the coefficient of updating fixed capital. This is explained by the fact that new means of labor, whose volume is growing rapidly, begin to function alongside old fixed capital. In this case accumulation grows even more rapidly than introduction and the expansion of fixed capital is accelerated. But updating of fixed capital occurs only through accumulation of new means of labor, which is more characteristic of extensive reproduction of fixed capital.

If the introduction, withdrawal, and accumulation of fixed capital grow concurrently and at an even rate, this ensures the highest growth rate in updating fixed capital. This is precisely the version that is characteristic of the intensive type of reproduction, creating conditions for rapid, radical updating of the entire production apparatus, because the new means of labor supplant the wornout and obsolete ones in the composition of fixed capital; they do not operate alongside them.

Analysis of changes in reproduction elements of USSR fixed capital in a period of less than 20 years enabled us to draw a number of conclusions (see table, next page). During this time there was a slight decline in the updating coefficient. As a result of this, where the coefficient of updating of fixed capital was 0.07 in 1983, it would take 14.3 years to completely renew the fixed capital. A close dependence of updating on introduction and accumulation of fixed capital is observed. Despite a tendency to decline, introduction and accumulation remain at a high level. The coefficient of introduction,

which was 0.075 in 1983, ensures reproduction of fixed capital in 13.3 years; correspondingly, the coefficient of accumlation, equal to 0.063, ensures reproduction in 16 years. The table shows a very close dependence of the rate of growth of fixed capital on accumlation, which ensures stable growth in fixed capital.

Indicators of Reproduction of USSR Fixed Capital[7]

Годы (a)	Темпы прироста основных фондов, % (b)	Коэффициент ввода (c)	Коэффициент выбытия (d)	Коэффициент накопления (e)	Отношение накопления к выбытию (f)	Коэффициент обновления (g)
1966	9,9	0,090	0,020	0,070	3,40	0,086
1967	7,1	0,094	0,024	0,070	2,98	0,086
1968	7,0	0,090	0,016	0,070	4,58	0,087
1969	7,4	0,090	0,020	0,070	3,80	0,084
1970	7,2	0,097	0,020	0,077	3,87	0,090
1966 – 1970	7,8	0,096	0,019	0,075	4,43	0,089
1971	7,7	0,096	0,010	0,080	6,97	0,088
1972	8,4	0,095	0,017	0,078	4,60	0,089
1973	7,9	0,098	0,019	0,078	4,05	0,090
1974	7,9	0,095	0,020	0,070	3,98	0,086
1975	7,3	0,096	0,027	0,070	2,53	0,090
1971 – 1975	7,8	0,096	0,019	0,075	4,43	0,089
1976	6,9	0,090	0,023	0,070	2,97	0,085
1977	6,9	0,090	0,017	0,070	4,30	0,087
1978	7,1	0,084	0,012	0,071	6,00	0,080
1979	6,3	0,078	0,015	0,064	4,20	0,074
1980	6,4	0,080	0,017	0,064	3,90	0,076
1976 – 1980	6,7	0,084	0,016	0,068	4,27	0,080
1981	6,2	0,076	0,013	0,063	4,60	0,072
1982	6,3	0,075	0,021	0,063	3,00	0,071
1983	6,3	0,075	0,022	0,063	2,89	0,077

Key: (a) Years;
(b) Growth Rate of Fixed Capital, in percentage;
(c) Coefficient of Introduction;
(d) Coefficient of Withdrawal;
(e) Coefficient of Accumulation;
(f) Ratio of Accumulation to Withdrawal;
(g) Coefficient of Updating.

At the same time it may be concluded that the updating of the production apparatus during the period studied was one-sided because most of the fixed capital introduced was used for updating by expanding the accumulated part of fixed capital. Accumulation exceeded withdrawal 3-4 times and more. The coefficient of withdrawal not only did not grow, it even declined. The coefficient of withdrawal in 1983, which was 0.022, would have required about 48 years to update the existing production apparatus by replacing means of labor being withdrawn. Calculations show that despite the generally high coefficient of updating, significant volumes of wornout and obsolete fixed capital was gradually accumulating in the production apparatus. This testifies, among other things, to the fact that the method of updating fixed capital that is being used is more characteristic of the extensive than the intensive type of reproduction.

Under contemporary conditions where scientific-technical progress has accelerated the obsolescence of means of labor, inadequate withdrawal of obsolete capital is becoming a brake on technical progress and contradicts the needs of production intensification.

In 1983 the service lives of fixed capital in the USSR were 47.2 years, compared to 65 years in 1958-1965.[8] Despite a certain decline, service lives remain very long. It is necessary to increase the proportion of withdrawal of fixed capital 1.5-2.0 times to ensure normal replacement of machinery in USSR industry.[9]

The need to expand fixed capital is determined to a significant degree by the need to replace manual labor with machinery. This is the only basis on which the highest world levels of labor productivity can be attained. Solving this major socioeconomic problem will require qualitative improvement in the composition of fixed production capital and an increase in the proportion of machinery and equipment in it, above all the proportion of working machines.

Reconstruction and technical re-equipping of existing enterprises ensure more rapid and rational satisfaction of society's need for means of labor. Reconstruction is exactly the form of expanded reproduction of fixed capital that creates favorable conditions for accelerating the replacement and updating of the production apparatus. With reconstruction the increase in production capacities is achieved 2-3 times faster than with new construction, while expenditures per unit of growth in output are 1.5-2 times lower.[10] Therefore, "the proportion of capital directed to reconstruction, as part of the total volume of production capital investment, must be raised from one-third to at least one-half in the next few years."[11]

The key condition for replacement of obsolete means of labor is that the new machinery and equipment must be progressive, more efficient. Scientific-technical progress must not be carried on in an evolutionary way, primarily by improving existing technologies and through partial modernaization of machinery and equipment. "We need revolutionary changes, a transition to fundamentally new technological systems, to later generations of equipment which produce the highest efficiency."[12]

The condition for withdrawal of wornout fixed capital is reimbursement of its value in output produced and sold. Reducing the turnover periods of fixed capital creates conditions for accelerating replacement of existing capital with new. Accelerating the payback rate of newly introduced fixed capital also plays a substantial role in this process. The depreciation service lives of fixed capital are quite important here. In 1983 they were 37.6 years, and accordingly depreciation deducations for renewal calculated per ruble of fixed capital were 2.67 kopecks, which supported financing for just 35.5 percent of capital investment in the national economy.[13] We should observe that in the United States in 1961-1972 the proportion of depreciation in capital investment was 0.7, while the average service lives of fixed capital, calculated at the ratio of the value of the latter to computed depreciation, were 16.7 years.[14] In the USSR in 1983 the ratio between the value of fixed capital being withdrawn and depreciation deductions for renewal was 0.8.[15] In our opinion,

higher norms of depreciation for renewal than those currently established are needed to finance accelerated replacement of fixed capital that is being withdrawn.

For normal functioning and loading of existing production potential it must be provided with material and labor resources. The increasing difficulty of extracting raw materials, fuel, and energy, their growing cost, and the imbalance between production capacities being introduced and material resources lead, among other things, to a situation where failure to incorporate more than half of the capacities introduced in industry is linked to shortages of raw and processed materials, energy, and water.[16] Only by creating a qualitatively new, efficient production apparatus and through broad use of highly productive machinery and equipment and fundamentally new technologies that ensure conservation of fuel, energy, and materials is it possible to balance the production apparatus with the material resources necessary to load it.

A significant rise in the quality of machine building output is paramount for accelerating the updating of fixed capital on a new technical basis, both by accumulation and by replacement of withdrawn fixed capital. The proportion of output from this sector that has the highest quality category and ensures high labor productivity and a decrease in total expenditures of live and embodied labor for production of a unit of output is still low. Thus, in 1982 the proportion was 38.5 percent of the total volume of commodity output at the country's 11 machine building ministries.[17] A rise in the quality of equipment liberates the accumulation fund of fixed capital, broadens the possibilities of replacing wornout and obsolete means of labor, and accelerates the possibilities of switching to primarily intensive paths of expanded reproduction.

FOOTNOTES

1. See "Materialy Plenuma Tsentralnogo Komiteta KPSS 23 aprelya 1985 goda" [Materials of the 23 April 1985 Plenum of the CPSU Central Committee], Moscow, 1985, pp 7, 10.

2. V. I. Lenin, "Poln. sobr. soch." [Complete Works], Vol 2, p 146.

3. M. S. Gorbachev, "Korennoy vopros ekonomicheskoy politiki partii. Doklad na soveshchanii v TsK KPSS po voprosam uskoreniya nauchno-tekhnicheskogo progressa 11 iyunya 1985 goda" [The Key Issue of Party Economic Policy. Report at the 11 June 1985 Meeting on Issues of Accelerating Scientific-Technical Progress at the CPSU Central Committee], Moscow, 1985, p 10.

4. See "Narodnoye khozyaystvo SSSR v 1983 g." [The USSR Economy in 1983], Moscow, 1984, pp 47, 48.

5. Ibid, pp 101, 105, 355.

6. "Materialy Plenuma...," op. cit., p 10.

7. Calculated according to the following works: "Narodnoye khozyaystvo SSSR v 1965 g." Moscow, 1966, pp 64, 521; "Narodnoye khozyaystvo SSSR v 1967 g."

Moscow, 1968, pp 61-62, 605; "Narodnoye khozyaystvo SSSR v 1968 g." Moscow, 1969, pp 50-51, 511; "Narodnoye khozyaystvo SSSR v 1970 g." Moscow, 1971, pp 60-61, 471; "Narodnoye khozyaystvo SSSR v 1972 g." Moscow, 1973, pp 60-61, 467; "Narodnoye khozyaystvo SSSR. 1922-1972" [The USSR Economy. 1922-1972], Moscow, 1972, pp 60-61, 317; "Narodnoye khozyaystvo SSSR v 1973 g." Moscow, 1974, pp 57-60, 537; "Narodnoye khozyaystvo SSSR v 1978 g." Moscow, 1979, pp 41-43, 333; "Narodnoye khozyaystvo SSSR v 1982 g." Moscow, 1983, pp 46, 48, 327; "Narodnoye khozyaystvo SSSR. 1922-1982" [The USSR Economy. 1922-1982], Moscow, 1982, pp 68-69, 359; "Narodnoye khozyaystvo SSSR v 1983 g." Moscow, 1984, pp 7, 50, 346.

8. Calculated according to "Narodnoye khozyaystvo SSSR v 1983 g.", op. cit., p 50.

9. See "Problemy intensivnogo razvitiya proizvodstva" [Problems of Intensive Production Development], Kiev, 1978, pp 181-182; see also V. Faltsman and A. Ozhegov, "Withdrawal of Fixed Capital: Investment Opportunities and Limitations" VOPROSY EKONOMIKI No 6, 1983, pp 56-66.

10. See D. A. Baranov, "Intensivnoye sotsialisticheskoye proizvodstvo" [Intensive Socialist Production], Moscow, 1978, p 15.

11. M. S. Gorbachev, op. cit., p 11.

12. "Materialy Plenuma..." op. cit., p 10.

13. Calculated according to "Narodnoye khozyaystvo SSSR v 1983 g.", op. cit., pp 50, 359, 546.

14. See "Obnovleniye osnovnogo kapitala v SShA" [Renewal of Fixed Capital in the United States], Moscow, 1977, pp 337, 341.

15. Calculated according to "Narodnoye khozyaystvo SSSR v 1983 g." op. cit., pp 50, 546.

16. See S. Belov, "The Production Potential of Developed Socialist Society" EKONOMICHESKIYE NAUKI No 1, 1983, p 24.

17. See G. Marchuk, "Scientific-Technical Progress: the Foundation of Intensification of Public Production," KOMMUNIST No 4, 1983, p 66.

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NEW STAGE IN PRODUCTION AUTOMATION DETAILED

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 5, May 86 pp 9-23

[Article by G. Stroganov: "A New Stage in Production Automation"]

[Text] During 1984 and 1985 a number of articles were published in PLANOVOYE KHOZYAYSTVO on the economic problems involved in introducing flexible production systems, rotary transfer machines and automatic conveyer lines and other automatic lines, and the causes for delays in their broad dissemination.* In this article the chairman of the USSR Gosplan, doctor of technical sciences professor G.B. Stroganov, clarifies the prospects for developing a qualitatively new kind of fixed production capital in the national economy, namely automated production systems, and developing cooperation between the fraternal countries in accelerating scientific and technical progress.

The consistent development of the process of intensification in social production is an integral part of CPSU economic strategy. The Basic Directions for the Economic and Social Development of the USSR for 1986-1990 and for the Period through the Year 2000 set the task of moving out onto leading scientific and technical positions in the shortest time possible, and to the highest world levels for quality and labor productivity, given the intensive and more complete utilization of resources and capacities.

Analysis shows that at least two-thirds of the entire effect from scientific and technical innovations included in national income come from the system of machines and equipment. It is precisely this that determines the key role of machine building in effecting the scientific and technical revolution, accelerating intensification and improving production efficiency in all elements of the national economy. And now, much depends on the accelerated development of machine building and the implementation of measures outlined to improve its management structure and effect a radical restructuring of the entire scientific-production apparatus; in other words, from the rates of renewal and development of new capacities in the scientific and technical base within normative periods that insure a rapid transition to the production of fundamentally new systems and sets of machines and equipment. This, however,

can be done on the basis of the extensive use of up-to-date organizational-technical decisions and introduction of an economic mechanism.

In his report to the CPSU Central Committee conference on questions of accelerating scientific and technical progress, CPSU Central Committee general secretary M.S. Gorbachev noted the following: "In recent years the CPSU Central Committee and USSR Council of Ministers have made a number of major decisions on key directions in the development of machine building such as flexible automated production facilities, rotary transfer machines and automatic conveyer lines, the development, manufacture and use of computers in the national economy, and automated design systems. They were aimed at developing new technological processes, including automated plants, operating on an unmanned basis. Thus, a serious base is being established for an upsurge in Soviet machine building as the basis for technical reconstruction of the national economy. This is a main direction in our development and it will be firmly followed both now and in the future." [1]

The accomplishment of a preferential and progressive buildup in the potentials of machine building in accordance with the demands of the 27th CPSU Congress will be more successful the more rapidly the capacities of the scientific and technical base are created and the entire "science--design--test stand testing--technology--production" chain is restructured. The results obtained from this work and the criterion for them will be the rates at which the most up-to-date, productive and powerful tools of labor are produced. It is important that the total increase in the productivity of this technology outstrip costs, which in the final analysis will lead to a reduction in the amount of equipment in operation and as a result, to a reduction in the number of work places.

Scientific workers must make a major contribution to the intensification of social production required to switch to a normative separation of financial and material resources in order to conduct scientific research and testing-and-design work in order during the 12th Five-Year Plan to expand and develop the experimental laboratory capacities of major scientific research institutes, scientific-production associations and design bureaus and equip them with up-to-date test-bench and experimental equipment, and automated systems for the planning, design and testing of new models.

A fundamental acceleration in scientific and technical progress will mean first and foremost a switch to fundamentally new technological systems capable of increasing labor productivity many times over and the focusing of attention on questions concerning production retooling and renewal of the active part of fixed production capital. The basis of the solutions to these questions is the comprehensive automation of technological processes based on the use NC tools, robot complexes, flexible production systems (GPS), rotary transfer machines and automatic conveyer lines and other automated lines, automated automated design systems (SAPR) for the control of technological processes (ASUTP) and other production management systems using computers.

Comprehensive production automation based on the extensive use of sets of highly productive precision equipment with the control of technological processes and of production in general effected by microprocessors and

computers insures flexibility in production and makes it possible to isolate precisely that particular direction in the development of scientific and technical progress in machine building that is characterized by minimum expenditures of time and labor on resetting technological equipment when production is changed or when the organization of production is restructured.

The prerequisites for accelerated scientific and technical progress in machine building have already been created. Thus, extensive use is now made of highly productive Soviet-produced NC machine tools, machining centers and other multifunctional machines and equipment. Specialists have been trained in new occupations (machine tool operators, programmers, setters-up working with electronics and others), and computer-based automated systems for running programs are in operation. Experience has been gained in the operation of highly productive equipment; which makes it possible to move on to a new stage in the comprehensive automation of production based on the introduction of technology requiring few or no attendants, and to develop flexible production systems and SAPR, which are of enormous importance in intensifying production processes and engineering labor.

Flexibility and mobility are today the main directions in improving organization in the production of all kinds of machine-building output, from small-series runs to mass production.

Introduction of the means of comprehensive production automation is also conditioned by the fact that under the conditions of accelerated rates for scientific and technical progress and marked improvement in the technical level, complexity and quality of output, its production is accompanied by the use of fundamentally new kinds of materials and technological processes based on the use of very high speed machining, very high and very low temperatures, laser and electron-beam methods and the kind of physical and chemical processes not previously used in machine-building technology.

It should be noted that control of the overwhelming majority of new "base" technologies is not amenable to the human organs of sense and is possible only given complete automation and robotization of their process, that is, the use of production systems that operate on the basis of technologies requiring few or no attendants. Thus, comprehensive automation and its organization on a flexible basis qualitatively alters the role of the human factor in the production process. Completely automated technologies free up the human operator from direct participation in execution of the technological process and essentially shift his activity into the field of engineering and technical preparations for and the maintenance of production facilities. This trend is seen most graphically in the advanced sectors of industry that determine scientific and technical progress (machine-tool engineering, instrument building, electronics, the electrotechnical industry, and petrochemical and heavy machine building), and is expressed in the growing proportion of maintenance workers and engineering and technical workers as part of the total numbers of industrial production personnel.

In this connection, it is important to have a clear-cut idea of what is meant by the term "flexible production system." This clarity is not always achieved in the materials published on this subject. It can be seen in the case where

by flexible production system is understood an organizational and functional structure for production, capable of being adapted with sufficient ease to the product range for output produced in automatic or automated mode, taking the production situation into account. As a rule, flexible production systems are based on the "machining center" types of machine tools that have facilities for built-in monitoring and diagnostics. They are linked together in a single set with computer-based automated transport and storage systems and are equipped with industrial robots and manipulators.

In these kinds of production facilities provision is made for the necessary number of automated storage facilities and there is an automated system for technological preparation of production. Here, the flexibility of the production system must be economically justified and promote high productivity, output quality and maintenance, and in the final analysis insure the highest level of competitiveness. But it should not be forgotten that as the flexibility of a system increases there is a marked tendency for its productivity to fall and costs to rise. Therefore, maximum results are achieved with optimal flexibility in the system.

The highest form of integration of all kinds of technical facilities is the flexible machine system (FMS). The above-mentioned flexible production system constitutes the basis of this. It is a question not of a technology or set of equipment but of the form taken by the comprehensive automation and the organization of the technological process. FMS combines up-to-date technological equipment, industrial robots, transport and storage facilities and other elements of an automated production facility into a single system, insuring much greater efficiency than would be achieved by use of its elements individually. Herein lies the progressiveness and economic importance of the FMS. And its flexibility is insured by the broad range of facilities included in its NC equipment and machining centers. Compatibility in the operation of all the components in a flexible production system based on standard general-purpose software packages is insured by the universality of the computer facilities that control it.

It should be particularly emphasized that like multifunctional and multiple-product-range production facilities, specialized FMS's possess all the features of the latest progressive production facilities and can include the main forms used in the organization of production processes (automatic assembly lines, various types of flow line, automated and comprehensively automated sections). And this is precisely why flexible automation is earmarked as the main direction in development of the production base.

During the 12th Five-Year Plan movement in this direction will make it possible to effect profound qualitative transformations in fixed capital and socioeconomic changes in all sectors of industry, primarily machine building. They will be based on the fundamentally new technical features of production systems. These are flexibility and mobility, which make it possible to set up for the production of new output in only a few minutes (that is, the ability to produce a broad range of products within the limits of the technical features of the basic technological equipment); the linkage between SAPR and the automated system for technological preparation of production on the basis of standard software, which makes it possible to make changes on an

operational basis in the geometric parameters of the product being manufactured; prolonged service life, based on the modular principle in construction of the flexible production system and the unlimited opportunities for reprogramming work as an inherent property of the flexible production system; and possibility of organizing production on a strict time basis in modes requiring few or no attendants, primarily in third and second shifts.

Flexible production systems are capable of insuring the greatest efficiency in machine-building production and fully satisfying society's economic, social and other requirements, first and most importantly sharply increasing labor productivity, along with savings of all kinds of resources, and improving working conditions and enhancing the attractiveness and intellectual content of work.

These, then, represent in a very general way the features and assessment of the social purpose of the progressive structural shifts in machine building associated with the production and introduction of flexible production systems. Of course, the degree of flexibility is determined by the type and the design and technical features of articles, and also by the technical facilities of the equipment, and it is evaluated from the number of parts machined and the quality and variety of types or geometric shapes of parts that it can machine, and also by the length of the work cycle.

In order to successfully cope with the tasks outlined by the 27th CPSU Congress for the accelerated retooling of sectors in the national economy, the machine-building ministries have drawn up a program of work to develop and bring on line 585 FMS control systems and more than 360 ASUTP's (against 291 ASUTP's during the 11th Five-Year Plan) at existing enterprises. And it is planned to develop 640 systems to automate the corresponding design work of designers and improve their labor productivity. The resources allocated for computer equipment will make it possible to create more than 21,000 automated work stations that will be used by more than 140,000 designers, technologists and planners.

Work continues on the formation of automated data processing systems in ministries, associations and enterprises, to which end it is planned to create more than 47,000 automated work stations at which it will be possible for 160,000 people to work.

The resources listed in all directions of computer application will make it possible to create more than 68,000 automated work stations that will be used by more than 311,000 people. The calculations show that improving the capital/labor ratio for computer facilities will insure a redistribution of occupations and free up more than 10,000 [as published; should probably read "100,000"--ed] people, including more than 30,000 administrative and managerial personnel and more than 70,000 designers, technologists and planners.

There is an urgent need to develop a national and sector automated unified system for a data bank of standard physical-technical effects and technological and technical decisions. Its introduction will make it possible to accelerate the development of new machines and equipment and eliminate

subjectivism in the choice of the most efficient designs and technological processes. This step will improve efficiency in the use of allocated resources and will help in coordinating them with automated systems for the preparation of production. Large-scale duplication of software programs with (subsequent) data in the field of physical effects, materials, equipment, standardized assemblies and parts and modular and basic designs, and software for the methods of computer modeling of automation in planning-and-design and test stand work will insure a sharp reduction in the lead times for the development and setup of new articles in production.

The introduction of flexible resettable production facilities at small and medium-size specialized enterprises envisages rapid changes in the output products list in general machine-building production in order to produce rapidly renewable machine-building output (up to 40 or 50 percent), which will make it possible to reduce prime costs 8 to 10 percent through production specialization during the five-year plan, and to increase labor productivity by a factor of 2 or 3.

Within Soviet industry flexible automated sections of the ASV and ASK types have been developed and introduced into production for mechanical machining of parts such as revolving elements and body parts (developed by the Experimental Scientific Research Institute of Metal Cutting Machine Tools ("ENIMS") in Mosocw). Thus, the ASK-10 was introduced at the Zhalgiris Plant in Vilnius, the ASK-20 at the Ivanovo Machine Tool Production Association imeni 50-letiye SSSR, the ASK-30 at the Ulyanovsk Heavy and Unique Machine Tool Plant, the ASV-21 at the Sasovo Automatic Line Plant, and the ASV-25 at the Moscow Krasnyy proletariy Machine Tool Plant. The ASVR-01 flexible automated section has gone into operation at the Moscow Dynamo Electromechanical Plant for mechanical machining of large stepped shafts for electric motors. At the Ramenskoye Tekhnopribor Experimental PLant a flexible automated section is being used to machine stock for various parts, both revolving elements and body parts (the products list contains 88 designated items); while at the Mogilev Tekhnopribor Plant a flexible automated production system is being used to machine parts for revolving elements (with a products list containing 90 designated items).

It should be emphasized that flexible production systems do not exclude other methods and facilities for automating production that have their own purpose in terms of the final result and, consequently, field for rational application.

Experience both at home and abroad indicates that the expediency of using any given kind of technological equipment with varying degrees of flexibility and automation (automatic rotary transfer machines and automatic conveyer lines, flexible production modules and sections, robotized technological sets, machining centers, automatic lines and so forth) is determined mainly by the annual volume of parts production, the number of type sizes and their complexity.

One major and fundamentally new Soviet invention is the rotary transfer machines and automatic conveyer lines developed under the leadership of L.N. Koshkin [2], which are very promising for the mass production of many kinds of

output, including machine-building output. These lines can rightly be called a fundamentally new facility for production intensification based on automation. They insure the comprehensive mechanization of technological processes, at least halve the sizes of the production areas required compared with regular equipment, and raise labor productivity by a factor of at least 4 to 10 while reducing the length of the manufacturing cycle by a factor of up to 20 and the volume of transport operations by a factor of up to 30.

The rotary transfer machine is an aggregate of several technological and transport rotors located in a common bed according to the technological sequence used to machine or assemble parts, and coupled by a drive that moves them synchronously; which makes it possible to carry out the main and auxiliary technological operations automatically. The technological rotor combines a number of tools used to machine and assemble parts, and also auxiliary devices that complete a movement along a closed trajectory about a common axis, which insures that an entire set of operations is carried out, including the positioning and feed of the article being machined. In turn, the transport rotor is a system of holding organs and auxiliary devices that also complete a closed movement about a common axis and transport and feed the articles being machined on the technological rotors.

The automatic conveyer line is a multiple-operation technological machine in which operations are performed in a process in which articles and tool are transported together, with the tool separated from the actuators and located in closed conveyers that circle the rotors carrying the actuators

Rotary transfer machines and automatic conveyer lines are already being operated in automotive manufacturing, tractor and agricultural machine building, and the electrotechnical, chemical, food and other industries and they insure high production efficiency. For example, the line set up at the Podolsk Accumulator Plant is 15 times more productive than the five automatic thermoplastic machines used previously and has freed up 20 people. At the Latvian Domestic Chemicals Production Association the automatic conveyer line used to press and assemble valves for aerosol cans produces 1,000 valves per minute. Introduction of that line made it possible to free up about 400 people.

Rotary transfer machines and automatic conveyer lines are most efficient in large-series and mass production of parts that have a relatively simple geometric form and are relatively small; the products list within the national economy is significant. However, rotary transfer machines and automatic conveyer lines are still unsuitable in machine building and metalworking.

Complying with the assignment from the CPSU Central Committee Politburo, which considered the question of introducing rotary transfer machines and automatic conveyer lines in the national economy, the USSR Gosplan and State Committee for Science and Technology have drawn up and agreed with interested ministries and administrations a plan for measures envisaging specialization by the leading machine-building ministries. The head organizations for the ministries have been determined for the development and introduction of rotary transfer machines and automatic conveyer lines in the national economy, together with a list of normative-technical documentation to be worked on

during the period 1987-1988 and the tasks for ministries in developing, manufacturing and starting up industrial production and introducing rotary transfer machines and automatic conveyer lines during the period 1986-1990. From 1986 the USSR Gosplan plans to produce them for machine building and metalworking in a separate section [of the plan]. The plan includes the task of manufacturing more than 400 sets of these systems.

During the current five-year plan it is intended to produce more than 5,400 sets of these lines for various technological purposes, including more than 2,600 sets for the food industry.

Rotary transfer machines and automatic conveyer lines are finding extensive application in the fabrication of articles from plastics, parts for bearings, the assembly of bushing-roller chains, and the production of an extensive range of articles in the electrotechnical, food, medical and chemical industries and of cultural and everyday articles.

The development and introduction of progressive new technology in the national economy are of an intersector nature. In this connection, in conformity with a decision of the CPSU Central Committee and USSR Council of Ministers intersector scientific and technical complexes are being set up, which include the head sector institutes of a number of leading ministries.

The following different automated systems can be distinguished to provide an idea of their fields of rational application:

--specialized automatic production (the fixed automatic line), the rotary transfer line, the automatic conveyer line (annual output of parts batches is more than 30,000 to 50,000 pieces with one or two machined parts);

--the specialized automatic system, the resettable automatic line, the multiple-product automatic rotary transfer line (annual output of parts batches 5,000 to 30,000 pieces, number of types 2 to 5);

--the flexible production line (or section), the flexible production system (annual output of parts batches from 50 to 2,000 pieces, number of parts types 5 to 100);

--the flexible production module (annual output of parts batches 20 to 500 pieces, number of parts types 40 to 800);

--the NC machine tool, the machining center (annual output 20 to 100 pieces, number of parts types 100 to 2,000).

Of course, the fields for the most efficient application of the various automated systems cannot have precise boundaries but the above list characterizes the technological expediency and the possibility of using any given automated system, including automatic lines in large-series production.

Together with the USSR Gossnab and the State Committee for Science and Technology, in January 1985 the USSR Gosplan drew up and confirmed a provision on the development, manufacture, delivery in complete sets, introduction and

technical servicing of flexible automated production systems and modules. The basic planning document defining the products list, number and time periods for the development of flexible production systems is the Nominal List drawn up by the USSR Gosplan for these systems. This defines the products list and the number of flexible production systems that are to be designed, manufactured and introduced during the planned period and the following 2 years; the ministry clients, the general project engineers and subcontracting project engineers, and the manufacturing enterprises (suppliers) of the flexible production systems and their components; and the products list and time periods for the manufacture of the most important components of the systems, namely the built-in technological equipment, computer facilities, automated transport and storage systems and so forth.

This is the first attempt made to compile such a list. Notwithstanding, it has produced results. It makes it possible to combine the variety of flexible production sectors, lines and shops connected in various technological directions and planned for introduction both by the machine-building ministries and ministries in other industrial sectors, taking into account the fact that the flexible production system is based, for example, on standard modular technological equipment, process control computer complexes, ATSS [expansion unknown--ed] and tool support systems, on the one hand, and special technological equipment, transport-and-storage facilities, specific process control computer complexes and so forth, on the other.

We agree with the conclusion that the flexible production systems should be introduced first at enterprises that have many years of experience in operating computer-based "machining center" types of equipment.

By the end of the 12th Five-Year Plan flexible production systems will be in use in several technological directions such as mechanical machining, blank-stamping production, casting, welding, the application of protective coatings, thermomechanic treatment and so forth. At present, however, in thermomechanic treatment they predominate among the systems being introduced. This is because within the country a considerable inventory of NC metalworking machine tools that constitute the base for developing flexible production modules, is already in operation. For example, in thermomechanic treatment the flexible production systems introduced in 1986 make up about 85 percent of the total number, while in blank-stamping production the figure is only 3 percent. But already in 1987 the proportion of these systems in thermomechanic treatment will decline to approximately 78 percent while in blank-stamping production it will rise to 8 percent. The group of flexible production systems for welding, casting and the application of protective coatings will be significant.

In all, during the 12th Five-Year Plan it is planned to produce more than 31,000 FMS modules, about 1,400 FMS systems, lines and sections, and also more than 1,800 complete sets of flexible production systems.

In order to insure this kind of buildup over the five-year plan more than 1,800 complete sets of computer complexes will be produced, along with 5,500 automated work stations for SAPR designers and technologists, 89,800

programmed controllers, about 200,000 sensors of various kinds, and more than 125,000 NC systems.

In the opinion of some specialists, instead of forcing the pace in introducing robots and large flexible production systems it is advisable to focus efforts on radically improving reliability in all elements of the systems, primarily their electronic components, and on developing relatively small flexible production systems based on two or three machining centers.

World practice shows that flexible production systems are a effective means for comprehensive production automation. They cover all its spheres, including the designing of articles, production management and fabrication of the finished product. According to figures from the specialists, the payback time for the systems is 2 to 2.5 years. Here, however, it should be emphasized that only a comprehensive approach to production automation, including the use of flexible production systems, can serve to improve intensification and efficiency in machine building as a basis for accelerating the development and improvement of the entire national economy.

How does economic efficiency accrue from the use of flexible production systems? Primarily from labor productivity gro th, which is expressed in the decrease in the length of the production cycle by a factor of about 30. When this occurs there is a sharp rise in the intensity of equipment utilization. Thus, the load coefficient for machining centers incorporated in flexible production systems rises to 0.8 to 0.9, while the shift coefficient for equipment increases to 2.5 to 2.8. It should also be noted that demand for equipment falls (by a factor of 2.6), as does the number of work places; and the number of jigs and cutting tools used decreases.

Continuous round-the-clock operation is basic in the approach to the regime of flexible production systems. This condition requires first and foremost improved reliability in all components of the flexible production system and precise production planning to insure full and continuous load on the main technological equipment, and also planning for material-technical supply. First steps taken in renewing the production apparatus on the basis of progressive facilities have shown the need for radical improvement in organizing the processes of their development, production, distribution, introduction and utilization, and also for defining national economic requirements for flexible systems of various technological designations and levels, from flexible production modules to automatic conveyer lines.

In light of the above, the suggestions offered for directing efforts toward introducing the simplest structural configurations of flexible production systems fail to meet the main task of their development and introduction, namely, insuring the accelerated restructuring of enterprises on the output of new products. The fact is that some of these kinds of systems being used in the various shops on a noncomprehensive basis do not alter the outline of the enterprise and do not affect the general nature of production. This is why the position of the USSR Gosplan in this matter is determined by the need for the accelerated development and comprehensive introduction during the 12th Five-Year Plan of the maximum possible number of progressive systems of

varying degrees of complexity and various applications, with their maximum concentration.

The tasks envisaged by the USSR Council of Ministers for the development and introduction of these systems during the 12th Five-Year Plan have been adopted by the machine-building ministries as minimum targets.

With regard to the problems of making efficient use of industrial robots, it should be noted that during the 12th Five-Year Plan the significant increase in the production of second-generation industrial robots is associated with the need to use them in as part of the flexible production systems in welding, pressing and assembly operations and machining. Whereas the first-generation robots carry out simple technological operations according to a rigidly set cyclic program that insures improved rhythm, quality and general standards in production, the second-generation robots now being produced can be re-adjusted and adapted to the specific conditions of production and the tasks being resolved. The development of flexible production systems for processes such as painting, welding, pressing and so forth will become impossible without increases in the production of industrial robots for extensive technological applications.

The gap that has formed between the number of robots fabricated and their introduction, which has been mentioned in the press [3], is explained by the present practice of producing a considerable products list (up to 400 designated items) for the simplest automatic manipulators and industrial robots by all the machine-building and some of the nonmachine-building ministries. Designs are poor in reliability and hardly suitable for incorporation in complex sets, as, for example, machine-tool sets, and even less in flexible production systems. Structural shifts in their production during the 12th Five-Year Plan will make it possible by 1990 to have increased the proportion of technological industrial robots with NC facilities, that is, designed for incorporation into flexible production systems, to 40 percent.

With regard to payback for the industrial robots introduced, here the approach must be the same as in the payback time for flexible production systems, namely, maximum load throughout the production cycle. At the same time, the applications for robot technology in harmful, heavy and monotonous and tiring operations are indisputable.

Important factors insuring the fabrication and introduction of flexible production systems in the national economy and further production efficiency include improving the base for technological equipment, increasing the proportion of highly productive NC machine tools, including the machining centers, FMS and technological industrial robots, and improving tool production.

In terms of the number of NC technological machine tools produced our country occupies a leading place in the world. During the 12th Five-Year Plan more than 124,000 NC machine tools will be produced, including 31,000 machining centers. Leading Soviet and foreign experience shows that now the role of programmed equipment is determined not by the numbers of NC machine tools overall but by the proportion of the most complex machine tools possessing

various functional facilities and capable of carrying out multiple operations, with automatic replacement of tools. Consequently, shifts are needed in the structure of equipment: increasing the proportion of up-to-date machining centers and FMS that are competitive in the world market. And whereas during the first year of the 12th Five-Year Plan their proportion in the total output of NC machine tools is 19 percent, by 1990 it will be more than 30 percent.

What kind of effect will be achieved by using tens of thousands of NC machine tools in the national economy? It must be recognized that although the main task is improving labor productivity, intensity in the operation of highly productive equipment remains low. The average shift coefficient for equipment operation today in the various sectors is no more than 1.4 to 1.6. And this is mainly because of the poor reliability of NC machine tools and the inadequate level in organizing the technological preparation of production.

The efficiency of this kind of equipment is possible only when it is concentrated in specialized shops or sections in quantities of at least 15 to 25 units. This is proven, in particular, by the practice of the Ivanovo Machine Tool Production Association which supplies clients mainly with complete sets of machining centers. Without complete sets and with a low work load it is difficult to achieve any tangible effect with NC machine tools, first and foremost machining centers, on labor productivity growth and reductions in prime costs and the output/capital ratio for production.

It is noted in publications that the cost of an NC machine tool is sharply different from its prototype (without NC) even though productivity is not usually more than 2 to 2.5 times greater, and in some cases even lower. This supposition leads to a situation in which a new kind of progressive equipment can often be justified only under conditions of three-shift operation and maximum load per shift. Hence the need for improvement in the pricing system so that prices become closer to the socially necessary expenditures, creating a reliable basis for production planning and management.

A State Expert Commission (GEKM) has been formed to deal with questions of the allocation and use of metalworking equipment in the national economy so as to improve the allocation and use of metalworking equipment, intersector coordination of these processes, analysis of applications from inventory holders, and the structure of the machine tool inventory and machine tool utilization. Its functions include the following: the organization of expert evaluations of the makeup of metalworking equipment; analysis and preparation of recommendations to improve the use of and the allocation system for metalworking equipment in the national economy, including that formerly in use; the preparation of conclusions on the soundness of ministry and administration requests and the transmission of these conclusion to the USSR Gosplan and Gossnab.

Jointly with the USSR Gosplan, the USSR Gossnab, the State Committee for Science and Technology and the USSR Central Statistical Administration and inventory holders, the commission has drawn up proposals to improve the system of allocation and use of metalworking machine tools in the national economy. Here, it is proposed that progressive new equipment be sent primarily to sectors in machine building and metalworking while the requirements of repair

shops, sections and workshops in the nonmachine-building industries be satisfied mainly by passing on to them machine tools and machines freed up at machine-building enterprises after repair and modernization.

Initial experience in the work of the State Expert Commission has shown that in the overall volume of orders from the machine-building ministries for 1985, progressive equipment averaged less than 30 percent; which indicates inadequate preparation in some sectors for the restructuring of production on an intensive basis.

An important role in solving the key problems in accelerating the economy's transfer onto the path of intensification and increased rates of economic growth, and in effecting a profound reconstruction and retooling of the sectors on the basis of use of the latest achievements of science and technology should be assigned to the strengthening of cooperation with the CEMA member countries in the field of machine building, and to enhancing the interest of enterprises in increasing output for export. Today, integration and the international division of labor have become the tool of such cooperation, without which steady development in any given socialist country and the successful resolution by that country of the most important problems of securing energy resources and raw materials and introducing the achievements of scientific and technical progress are impossible.

Machine building is the most dynamic sector of the national economy in most countries of the socialist community. During the period 1950-1985 the output of machines and equipment in the CEMA countries increased by a factor of about 35 (while overall growth in industrial production increased by a factor of 13), and makes up as much as 25 percent of total output.

The main features in the present stage of cooperation between the CEMA countries in the field of machine building include the transition to the organization of cooperation on the basis of comprehensive resolution of the most important sector and intersectoral problems (from scientific research and design developments to development of new equipment to the organization of specialized and cooperative production and mutual supplies), and also orientation on the development of machine systems based on standard units, assemblies and parts.

Joint work in the priority directions of science and technology is now moving to the forefront among the forms of multilateral scientific and technical and economic cooperation. Scientific cooperation will be effected and production specialization and cooperation expanded on the basis of the Comprehensive Program for Scientific and Technical Cooperation between the CEMA Countries through the Year 2000, adopted at the 41st (extraordinary) CEMA Session (December 1985). New forms of cooperation will be developed: direct production links between labor collectives and the creation of joint scientific-production and production associations and enterprises. Here, particlar attention will be paid to priority "hi-tech" directions such as the application of electronics in the national economy, comprehensive automation, nuclear power engineering, new materials and technologies for their production and biotechnology.

The fourth meeting of the CEMA Committee on Cooperation in the Field of Machine Building took place 18-20 March 1986 in Budapest. Delegations from Bulgaria, Hungary, Vietnam, the GDR, Cuba, Mongolia, Poland, Romania, the USSR and Czechoslovakia, and also Yugoslavia, led by the deputy heads of state of these countries, took part in the meeting. Questions stemming from the decisions of the CEMA Commission (the 41st extraordinary session), the CEMA Executive Committee and the plan for the committee's work during 1986-1987 were discussed at the meeting.

The committee has drawn up and approved measures to fulfill the tasks of the comprehensive program for scientific and technical progress in the CEMA member countries through the year 2000, including the priority direction of "Comprehensive Automation." A plan schedule for the preparation of agreements and the fulfillment of these task has been agreed. It is envisaged that agreements, arrangements and contracts for work started in 1986 will be concluded and signed during the first half of 1986.

Consultations have been held at which the representatives of the countries on the committee introduced proposals aimed at accelerating scientific and technical progress in the machine-building sectors, substantially raising the technical level and quality of the machines and equipment mutually supplied, and developing specialization and cooperation to the maximum, especially with respect to assemblies and parts, in the production of up-to-date kinds of machine-building output.

The committee adopted a program for scientific research and testing and design work and the development of test models (or batches) of robot equipment, and it also confirmed a plan for the work of the coordinating council for flexible production systems and industrial robots during the period 1986-1987.

Special attention should be paid to questions of multilateral cooperation to introduce computer and microprocessor equipment based on the latest articles available in the microelectronics element base. The microcomputers and minicomputers being produced make use of a standard microelectronic element base, interfaces, command system and software packages. They are compatible with the calclators and peripherals being produced.

The main fields for the extensive use of microcomputers and minicomputers have been determined, making it possible to achieve the greatest economic and social effect. They include primarily the automated management systems: for technological processes (in chemicals, metallurgy, the oil and gas industry and so forth), technological equipment, machine tools, machines, power installations, electric drives, hydrotechnical projects and industrial robots; power engineering and linear-dispersed projects and transport flow systems (high-voltage power transmission lines, gas pipelines and so forth); organizational management systems, operational planning systems and dispatcher systems, including systems for work places for engineering and technical workers and employees; industrial, scientific and medical control-and-measuring and diagnostic devices and instruments; apparatus and communications equipment for data processing and transmission; devices for sets of transport and other machines and equipment; and systems, devices and instruments for mass and individual use and for domestic purposes.

In accordance with the Comprehensive Program for Scientific and Technical Progress in the CEMA Member Countries through the year 2000, provision has been made for the large-scale, comprehensive automation of sectors of the national economy on the basis of the use of flexible auotmated production facilities with automatic conveyer lines, industrial robots, and automated equipment with built-in control systems, precision equipment, highly accurate measuring equipment, automated means of control for technological processes and technological equipment and integrated systems.

In order to reach this goal we face the task of developing primarily the following:

--systems for the automated planning and technological preparation of production, automation and accelerated research and experiments, automated production control systems for technological processes and integrated control systems;

--fast-adjustment and flexible production systems for various purposes, and also completely automated shops and plants;

--industrial robots and manipulators for the sectors of the national economy, including robots with artificial sight, able to receive voice commands, and programmed and able to be rapidly reset for changing operating conditions;

--automated technologies for producing high-precision equipment and instruments;

--standard subassemblies: mechanical, hydraulic, pneumatic, electrotechnical, electronic and other components; a number of improved monitoring and diagnostic devices for automated machines and technological equipment; and facilities for active monitoring, with good instrument durability and tooling-up facilities, and quality control systems;

--standard series of technical facilities, automation of lifting-and-transport, loading-and-unloading and transport-and-warehousing operations, facilities for utilizing waste, and various kinds of sensors for industrial robots and flexible production modules.

The development and large-scale use of automated systems for designing and controlling technological processes and production facilities will make it possible to improve the quality of planning, accounting, control and the organization of production, reduce technological lead times by a factor of 1.5 to 2 and design and fabrication costs by a factor of 1.5, and use broadly interchangeable power units and modules produced in the CEMA member countries; and to halve labor intensiveness; and in the field of lifting-and-transport, loading-and-unloading and warehousing work, to at least quadruple labor productivity.

The extensive introduction of automated production systems in the national economies of the CEMA member countries will signify improved production efficiency, reductions in time periods and costs when assimilating new kinds

of articles (by a factor of 1.5 to 2), improved labor productivity (by a factor of 2 to 2.5), a better equipment shift coefficient (by a factor of up to 2.8), reductions in the numbers of maintenance personnel, and the creation of conditions for creative and attractive work.

The return from automatic lines, including rotary transfer machines and automatic conveyer lines, for various production facilities, is indisputable. Their use insures improvements in labor productivity by factors of 4 to 10, reductions in capital investment by a factor of 2 to 2.5, and contractions of production areas by a factor of 2 or 3.

A significant effect is also produced from the use of industrial robots and manipulators in the national economy, including those with elements of adaptation and artificial intelligence. They replace people primarily in harmful, heavy and monotonous operations, and when they are used in a flexible production system they reduce the numbers of those employed.

Broad prospects are being opened up by the development of equipment and measuring devices for precision machine building and means of automation. Introduction of such equipment will make it possible to improve labor productivity by a factor of 2 to 10, with machining accuracies of down to 1 micron and measuring accuracy down to 0.1 micron, while improving reliability by a factor of up to 10 and quintupling the service life of parts. Taken together, all these things constitute the realization of the priority task "Comprehensive Automation" and will exert a profound effect on all spheres of life and activity in society.

One matter of extraordinary importance is the development of production of the most promising machines, equipment and tools and closer cooperation with the CEMA member countries in developing progressive new machines and equipment based on cooperative production through direct links between enterprises. The CEMA member countries will set up direct relations between enterprises, associations and scientific research organizations in the countries on the basis of the provisions adopted in specific bilateral and multilateral agreements and treaties, and this is an effective way of developing cooperation to implement the program.

For the purpose of making joint decisions on the most important problems by interested countries, joint scientific research and production associations will be set up on an ad hoc basis, together with international engineering and technological centers to work on and produce new equipment, technologies and materials, centers to educate and train and improve the skills of personnel, and also other joint enterprises and international scientific and technical collectives and laboratories. We already have this kind of experience. For example, within the Ministry of the Machine Tool and Tool Building Industry the Ivanovo Machine Tool Plant and the ZMS of Bulgaria, and the Moscow Krasnyy proletariy Plant and the Robot Plant in Bulgaria exist as joint enterprises. Work is underway on questions concering the creation of joint enterprises involving the USSR and Czechoslovakia.

Combining the efforts of machine builders in the fraternal countries on a new organizational level is designed to promote an upsurge in machine building and

in the final analysis insure resolution of the most important problems of the socioeconomic development of the CEMA member countries and thus strengthen the position of socialism in the world.

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The guarantee of success in the matter of a radical acceleration in scientific and technical progress is increased growth rates in development of the machine-building sectors and the model formulation of the matter on all sectors of the process of scientific and technical creativity, from the idea to the series production of a new product. And it is therefore the duty of each work in the machine-building complex to everything necessary to effect the most rapid transfer of the industry to the intensive path of development and improved production efficiency, and with specific deeds and new achievements insure the fulfillment of the historic decisions of the 27th CPSU Congress.

FOOTNOTES

* V. Vasilyev. "Flexible Production Systems." No 12, 1984; B. Belyanin. "Flexible Automation in Machine Building: Status, Difficulties, Problems." No 7, 1985; G.O. Kulagin. "Conditions for Intensification of Machine-Building Production." No 7, 1985; L. Koshkin. "Fundamental Problems in the Development of Machine Systems." No 9, 1985; D. Palterovich. "Organizational-Economic Problems in Developing Flexible Automation." No 12, 1985; V.K. Vasilyev. "The Question of Conditions for Intensifying Machine-Building Production." No 12, 1985.

1. M.S. Gorbachev. ""Korennoy vopros ekonomicheskoy politiki partii" [The Fundamental Question of Party Economic Policy], Moscow, Politizdat, 1985, p 15.

2. See PLANOVOYE KHOZYAYSTVO No 9, 1985, p 13.

3. See PLANOVOYE KHOZYAYSTVO No 12, 1985, p 43.

9642
CSO: 1820/150

RESOURCE UTILIZATION AND SUPPLY

SOME ENTERPRISES TO BE SUPPLIED FROM WHOLESALE TRADE NETWORK

Moscow GUDOK in Russian 3 Apr 86 p 3

[Interview of Gossnab USSR deputy chairman Nikolay Nikolayevich Nikolaychik by TASS commentator B. Grishchenko: "The Raw-Material Market: Seller and Buyers"]

[Text] The development of a stable raw-material base is a most important task in improvement of the economic mechanism, the 27th party congress emphasized. At a regular session, the Politburo of the CPSU Central Committee discussed the question of shifting associations, enterprises and organizations of a number of ministries and departments to material and technical supply by way of wholesale trade.

The aims and purpose of reorganizing the system of supplying production with raw and other materials are described by Gossnab USSR deputy chairman N.N. Nikolaychik whom Tass commentator B. Grishchenko talked to.

[Question] What is the principal distinctive feature of the system which material and technical supply will be transferred to beginning in 1987?

[Answer] It is the abandonment of rigid creation of stocks [fondirovaniye] of raw and other materials. The mechanism of supplying production with them will look thus: enterprise, association, scientific-research institute or design bureau deals directly with a regional supply organ possessing only the basis for acquiring what is required--production assignment and means of purchase.

Such a procedure in my view is in keeping with the party's economic strategy, the basis of which is acceleration of turnover of material resources, creation of a reliable anti-expenditure mechanism and, of course, simplicity and rejection of the numerous coordination and agreement stages. Overcoming bureaucratic barriers constitutes one of the reserves of boosting mobility, and flexibility of production so necessary in the epoch of scientific and technical progress.

[Question] Nikolay Nikolayevich, how is it planned to achieve this in practice?

[Answer] A production facility orders without any preliminary requests from the regional organ of Gossnab USSR everything it needs for fulfilling a planned target. If corrections are introduced into the target then the enterprise is able from then on to quickly order that which is required.

Formerly, on compiling a requisition for the forthcoming year, the enterprise's executives tried to include in it all kinds of variants and to provide themselves with raw and other materials, as they say, for every possible occasion.

But this is impossible. Hence the above-normal stocks of those things that perhaps are much more needed by others. It must not be permitted for material resources in our planned economy to be distributed in such an unregulated manner.

[Question] How is wholesale trade in material resources combined with production planning on the scale of the country?

[Answer] In a most direct way. Gossnab USSR is obliged to provide through its regional organs for the needs and requirements of production. That is, the planning principle is being firmly established in supply, but the actual production unit has more freedom of operational maneuvering than before with, of course, growing responsibility for end results.

This is in accord with the new economic mechanism and opens up real possibilities for speeding up scientific and technical progress. At the same time, as was pointed out at the CPSU Central Committee Politburo meeting, enterprises and ministries are released from the cumbersome work of compiling requisitions.

[Question] What sectors will be the first to be shifted to the experiment? After all, we are considering the experiment....

[Answer] Beginning next year, a number of nonproduction ministries, the USSR Ministry of Construction, Road and Municipal Machine Building, scientific-research institutes and planning and design organizations of all ministries and departments with experimental plants will be shifted to material and technical supply by way of wholesale trade.

Such a choice is dictated by the desire to test the system in different situations and under different conditions. It is difficult, for example, to imagine a more inconstant "client" than science with its experimental base. But this inconstancy is dictated by the need of speeding up scientific and technical progress. Is it possible to foresee in advance everything that would be needed for research or the effective creation of an experimental model? Of course not. It would be natural that in work with this group of clients, the new system would verify its possibilities in full scope.

As for the USSR Ministry of Construction, Road and Municipal Machine Building, suppliers will be dealing here with the stable production target of enterprises which are becoming partners of the regional organs. This mean

that the system will be tested in different situations and the possibility will appear of effectively overcoming "weak links" so that, having effectively eliminated them, new sectors and groups of enterprises are included in the sphere of the system's operation.

[Question] What will preparations be like for transition to material and technical supply by way of wholesale trade?

[Answer] A great deal will have to be done in a short period of time. In particular, the need of regional organizations should be determined for different kinds of materials, and a new commodity conducting system as we call it would be worked out. The fact is that cumbersome supply documentation is being changed in the direction of simplification.

It will be necessary to correctly assemble required stocks so that, as they say, production would not know refusal of what is required. It is important for the system to immediately display its reliability. The psychological factor in questions of supply plays a prominent role....

[Question] Do you have in mind the habit of a number of managers to acquire as much as possible "just in case"?

[Answer] Such a practice has arisen because of rigid creation of stocks. Managers are not always sure that some particular material will be there at the regional base in the coming year. So they stock up.

A situation is created comparable to that where at a store of the kind we are all acquainted with some product or commodity is "released" for some unknown reason "to some hands" according to the norm. And solely for this reason, they try to purchase as much as possible of it.

Naturally, it is impossible to copy such a "procedure" at the country's raw-material market, especially when production is being shifted to the intensive path of development. A decision was adopted at a regular session of the CPSU Central-Committee Politburo and sent to overcome bottlenecks in its material and technical supply.

In my opinion, it is very important for the main levers of this work to be the economy and the ruble. It is one thing to select or to "dislodge" stocks and another to purchase only that which is needed for work, keeping in mind the attainment of high end results with the smallest possible outlays.

7697
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CSA OFFICIALS SET GOALS, CITE OPERATIONAL SHORTFALLS

Chief on Shortcomings, Tasks

Moscow VESTNIK STATISTIKI in Russian No 4, Apr 86 pp 3-13

[Article by USSR CSA [Central Statistical Administration] Chief and Doctor of Economic Sciences Professor M. Korolev: "Tasks Arising For State Statistical Organs from the Resolutions of the 27th CPSU Congress"]

[Excerpts] In the years of the 11th Five-Year Plan, state statistical organs carried out a great deal of work in accordance with the tasks placed before them. Most important were improving the scientific grounding, reliability and completeness of statistical information on the development of socio-economic processes in our society and on the course of the fulfillment of the State Plan for Economic and Social Development of the USSR for 1981-85; concentrating the attention of analysis on the most topical problems of development in social production, its balance and proportionality, and raising ahe standard of living of the population; and, analyzing the existing reserves in the national economy and the reasons for the non-fulfillment of certain plan targets and the presentation of this information to management organs.

The systematic observation of the course of a large-scale economic experiment on improving the management mechanism in the national economy and the analysis of the efficiency of the system of planning and evaluation indicators employed for this were organized. In the execution of the resolutions of the May (1982) and April (1985) Plenums of the CPSU Central Committee, important work was conducted on improving the statistics of the agro-industrial complex. Systems of indicators for the activity of this complex were created anew, continuous observation of the fulfillment of the Food Program was established and a technique for determining production losses was developed.

The computer network was further developed, and its efficiency and quality of operation were raised. At the end of 1985, the 3rd phase of the ASGS [Automated State Statistical System] was placed in industrial operation. There are currently 169 EOI [expansion unknown] complexes in operation among 18 functional statistical subsystems.

An evaluation in principle of the operation of the state statistical organs was given in the Political Report of the CPSU Central Committee to the 27th

Party Congress: "The area of statistics is in need of serious improvement." This places the task of radically improving all activity before the Soviet statisticians.

First and foremost, existing shortcomings in the operation of statistical organs should be completely eliminated, the quality and effectiveness of information should be considerably improved, its objectivity and reliability should be achieved, and accounting documentation and accountability at all levels of the national economy, along with economic operations, should be brought to a level that completely meets the needs of administration.

It is necessary, as was determined in the Fundamental Areas of Economic and Social Development of the USSR for 1986-90 and for the Period to the Year 2000, "to raise the role of accounting, statistics and control in ensuring the rational and economical utilization of resources, strengthening the struggle against mismanagement and wastefulness and preserving socialist property. Control and auditing work must be improved, measures for improving the departmental control system must be implemented and its efficiency must be increased. Reporting must be reduced and simplified."

The issue of sharply reducing and simplifying reporting and introducing strict state order in this matter is currently paramount. At the 27th Party Congress, many delegates criticized "paper generation," "paper shuffling" and the like. In speaking of "paper generation," they undoubtedly had in mind the large excess amounts of reporting and not those created out of necessity.

In a speech to the congress, delegate Comrade V. Ya. Gorin, chairman of the Kolkhoz imeni Frunze in Belgorod Oblast, said: "The question of reducing the planning indicators of farms is quite correctly posed at the congress. In our opinion, all types of accounting and reporting should be reviewed and corrected at the same time.

"My dear colleagues of USSR CSA, think for yourselves: why require a weekly report from every contract collective, which has a greater vested interest than anyone in thrifty management and answers with rubles for the final result, on how and where every one of its tractors and combines operates? It is the same, after all, as deciding to let the bull out to pasture and tying him up with a rope anyway. No, it must be decided: either let him out or keep him at hand. Half measures bring half results, while, as stated in the report of the party Central Committee, we must double the majority of the principal economic indicators in the next 15 years.

"Why am I speaking in such detail about this? Because excess reporting and the creation of paper is not only testimony to a lack of trust in personnel. Swollen reporting is time taken away from specialists, from vital matters" (PRAVDA, 5 Mar 86 p 3).

In recent years, USSR CSA and other central economic departments have conducted some work on improving accounting and reporting and on reducing document turnover on that basis. The volume of statistical reporting for 1986 was reduced by 27% compared to 1985 and by 43% compared to 1981, while the

number of forms was decreased by approximately 10%. Interim operational reporting to the ministries was reduced by more than half, and reporting collected by sectorial management automation systems (OASU) by 40%. In order for the indicated work to lead to an appreciable reduction in reporting and document turnover in the economy, however, it is necessary to bring the work on reduction to a conclusion, verify the fulfillment of the directives on these issues, and react sharply to violations.

Here is an example of a "reduction," introduced by Chief Accountant L. Kozhevnikova of the Machine-Building Plant imeni Vorobyev (in the city of Gorkiy), who feels that, notwithstanding the measures adopted, the paper flow is not only not decreasing, but is even increasing. "...Since the beginning of this year," she writes in the newspaper IZVESTIYA (22 Mar 86, "The Ninth Wave of 'Introductions'"), "a new procedure for presenting balance sheets to the ministry has been established: where they were required monthly before, now once a quarter... in place of one level eliminated, another appeared: now Gosbank requires monthly reports which, in essence, repeat the report of the earlier balance sheet. Sometimes the impression is created that some kind of game is being played. Say that reports in Form No 5 (production expenditures) and reports in Form No 6 (product cost) are now combined. There seems to be half as much writing. But, on the other hand, twice as much information has to be given for each new form..."

Tajik SSR CSA Chief I. Karimov reported (this was written in the same article) that "many republic and union ministries continue to need the reports from their enterprises and organizations that are canceled by the central organs. Specifically, the kolkhozes and sovkhozes of Tursunzavedskiy Rayon present such reports to RAPO [Russian Pharmaceutical Association] on the condition of livestock. The employees of the republic CSA discovered that in the cotton-ginning industry, for example, illegal reporting at the request of USSR Minlegprom [Ministry of Light Industry] was being conducted, and proposed ending the paper swirl by official letter. The reaction to this was quite distinctive: the amount of forbidden reporting more than quadrupled: from 580 to 2,800 indicators.

"It is understandable that it is impossible to manage without business correspondence and without the control and accounting required by reporting. But is completely apparent that the paper 'wave' considerably exceeds rational requirements, and decreasing it deprives many administrative types of their accustomed work. That is why there is resistance to the beginning reconstruction at certain levels of the apparatus."

The amount of accounting work is unjustifiably and inordinately great, as before, and the system of planning and reporting indicators remains complicated and labor-intensive. The amount of statistical information collected by ministries and departments in the sector OASUs is excessive, where they are extremely unwilling to reduce it. The fallacious practice of collecting and presenting various information not stipulated in the reporting forms and approved in established procedure is being widely reinforced. The ministries, departments, institutes and local administrative organs continue to require a multitude of additional reports through arbitrary forms from enterprises, construction sites, kolkhozes and sovkhozes. More than 2,000

forms of such reporting were discovered and abolished by state statistical organs alone in 1985. Illegal reporting inflicts substantial losses on the economic activity of associations, enterprises and organizations, leads to the unjustified overloading of employees, diverts them from the fulfillment of direct duties, creates unnecessary paper flow and leads to excess expenditures of labor and funds. In many cases, indicators stipulated by state reporting are duplicated in this.

The large volume of non-approved reporting testifies to the fact that measures for discovering and abolishing it are clearly inadequate. The verification of the presence of illegal reporting at enterprises and organizations is not always conducted at the requisite level. Cases continue to occur where the presence of such reporting is not verified in all structural subunits of enterprises and organizations.

The shortcomings noted are basically a consequence of the fact that USSR CSA is not implementing the requisite measures for reducing and rationalizing statistical reporting, is not manifesting the necessary persistence and principle in eliminating the excesses permitted, is not an active organizer of this important cause and has not been able to achieve radical improvement in economic accounting.

The widespread practice of collecting a large amount of reporting and informational data by ministries and departments signifies that they are not devoting the requisite attention to improving the style and methods of sectorial management, are permitting the petty surveillance of associations, enterprises and construction sites and are trying to resolve questions of their current activity from the center as before. This style of work was condemned by the 27th CPSU Congress.

State statistical organs should conduct much work in the near future on sharply reducing and improving accounting and reporting in the country, and adopt measures as early as 1986 for substantially reducing statistical reporting (by no less than 50%) and introducing strict state order into it, utilizing more fully for this the possibilities of sectorial management automation systems, collective-use computer centers for state statistics, mechanization and automation information collection and processing and the integration of sectorial operational and state reporting and their uniformity.

It is necessary to make considerably more active the work with ministries and departments of the USSR on improving economic accounting and reporting and strengthening the struggle against illegal reporting. Reporting in the national economy should be straightened out and attempts by central and local organs to introduce superfluous indicators and reports not dictated by necessity should be halted decisively.

Immediate measures for eliminating shortcomings in this matter were determined at an expanded USSR CSA collegium session on 14 Feb 86. The conferences conducted at USSR CSA with the ministries and departments of the USSR and with the employees of the statistical services are very significant in resolving the tasks posed. The projected measures for reducing reporting and introducing strict state order into it must now be persistently carried out in

practice, constantly monitoring the course of the fulfillment of the resolutions of directive organs, fully utilizing the rights granted to statistical organs and actively fighting against the expansion of reporting. It is necessary to ensure the objectivity of information, which is one of the most important conditions for adopting well-founded and efficient administrative resolutions.

USSR CSA is monitoring the activity of ministries and departments on questions of setting up trustworthy accounting and reporting and striving for the adoption on their part of measures for eliminating the shortcomings discovered at enterprises and organizations subordinate to them. As the facts demonstrate, however, the work being carried out is clearly inadequate, there is still no radical turnaround in raising the quality of reporting and there are too many exaggerations, concealments and other distortions of report data, frequently as a consequence of neglect in primary accounting, delays in the incorporation of standardized forms of accounting documentation, and omissions in monitoring and auditing work on the part of ministries and departments.

Especially many distortions are discovered by audits at the enterprises and organizations of transportation, popular domestic services, capital construction, communal housing and industry. Unreliability in reporting exists as before in the Uzbek SSR, as well as in the Turkmen, Moldavian and Ukrainian SSRs and in a number of autonomous republics, krays and oblasts.

Work on monitoring the reliability of report data must be radically restructured and efforts must not be dissipated on auditing the facilities of a multitude of ministries and departments, becoming carried away by a number of facilities at a loss of quality, and more comprehensive and repeat audits must be conducted in the ministry systems. USSR CSA has often noted this shortcoming in the work of a number of union-republic CSAs, but measures for substantially improving matters in this area have still not been adopted.

Work is poorly organized on auditing in conjunction with other monitoring organs, ministries and departments. A number of union-republic CSAs do not devote much time to the auditing of public inspectors.

Many audits, especially those conducted by statistical organs at the rayon level, are of a quite superficial nature and do not really uncover distortions in reporting and the roots and causes of these phenomena. The Azerbaijan SSR CSA, for example, established that the employees of the Neftechalinskiy RIVS [rayon computer information system] did not uncover instances of distortions in reporting data at a single audited facility, when they were found by republic CSA specialists at five out of the six facilities audited.

Eradicating distortion and deception could considerably reduce manifestations of regionalism, departmentalism and permissiveness toward instances of distortion in state reporting and the parties committing them. Union-republic CSAs and local state statistical organs should strive persistently for the punishment of responsible officials guilty of distortions. USSR CSA has repeatedly indicated this to the Central Statistical Administrations of the Belorussian, Armenian, Turkmen and Kazakh SSRs.

In light of the tasks arising for state statistical organs from the resolutions of the 27th CPSU Congress, it is necessary to adopt effective measures, in fact rather than in word alone, for eliminating all obstacles on the path of introducing the requisite order in accounting and reporting in the national economy and ensuring the objectivity of information.

Only by raising the quality of report data can the question be posed of further improving work--the preparation of reports, memoranda and informational materials.

Timeliness is one of the chief features of information. Today, when the party poses the task of radically accelerating all social and economic development, the need for increasing the effectiveness of statistical data presented--composite reports, presentations and the like--acquires especial importance.

The whole system of state statistical organs should accelerate work on reducing the time for developing current operational reporting so that the basic results of industrial operations are formulated and reported to management organs on the second or third day after the expiration of the reporting period, and immediately on the next day for certain indicators such as weekly reporting on the output of the most important types of products. Substantial reductions in the time periods for developing data on construction, trade et al are needed.

In this regard, it is necessary to study seriously the question of how to base operational information principally on transmitted data through the sharp reduction of postal reporting, which is cumbersome, ineffective and does not meet the needs of the modern day. This task should be resolved in such a way that postal reporting is retained only for supplementary information that is necessary for a deeper analysis of developing trends. It seems that quarterly frequency is often adequate in this case.

The plans for the forwarding of reports should also be studied.

Another area for increasing the effectiveness of information is strengthening the interaction of state statistics and sectorial management automation systems. It is clear today that the organization of such interaction requires the resolution not only of technical questions in the collection and transmission of information, but also, on the one hand, ensuring the unity of methodology of state statistical indicators and the information bases of the automated systems of ministries, and on the other, utilizing it to the fullest extent. Such work is now being conducted with the all-union ministries. Apparently, it should be conducted by the CSAs of the union republics with the corresponding union-republic and republic ministries.

Raising the effectiveness of information would also be aided by the further development of the practice of preparing advance information of a forecasting nature. The discussion concerns the broad incorporation into statistical practice of scientifically based calculations of expected results and forecasts based on the utilization of mathematical apparatus and computers.

Definite experience exists, for example, in industrial statistics. The task of further development consists of the transition from short-term to long-term forecasts.

Great tasks are before the state statistical organs in economic work. It is fully and completely defined by the documents adopted by the 27th CPSU Congress and the strategic policy of the party for the acceleration of social and economic development.

In evaluating this most important sector of work, it should be noted that, unfortunately, there are many shortcomings here as well. Frequently the level of economic work is evaluated by a number of prepared memoranda and not by its topicality, content and deep analysis. There is much pettiness and banality along with a superficial attitude toward the phenomena analyzed.

The possibilities are far from exhausted for the organization of a truly comprehensive analysis of statistical materials, the results of which could demonstrate the course of fulfillment of plan targets and, depending on the effect of various social and economic factors, could reveal unfavorable trends appearing in economic development.

Crucial tasks are arising today before statistical organs for improving the observation of the course of fulfillment of current and prospective plans of economic and social development, the discovery of opportunities and reserves that exist, the analysis of economic growth, the implementation of a radical reversal in all areas of economic activity and the substantial raising of the efficiency of production, the quality of product output and the productivity of labor based on the broad incorporation of the achievements of scientific and technical progress and ensuring on that basis the further growth of the welfare of the Soviet people.

The discussion concerns, first and foremost, the necessity of deepening the analyticity of the materials developed and the formulation of themes for the questions analyzed in accordance with the plans for the social and economic development of the national economy in the upcoming five-year plan. Attention should be concentrated on the statistical study and analysis of the dynamic and proportionate development of the unified economic complex of the country and the efficient interaction of all of its levels. All-round research is needed here on: the proportionality and balance of economic development, its sectors and stages of reproduction, progressive shifts in the structure of the economy, growth rates of economic sectors, and especially those of them that determine scientific and technical progress, the incorporation of progressive technology and the automation and mechanization of production.

Questions that should be covered thoroughly are: the irrational utilization of labor, material, financial and secondary resources; losses and non-productive expenses, existing reserves and un-utilized opportunities that can be mobilized for the acceleration of social development.

The analysis of the course of realization of the comprehensive dedicated programs--the Food and the Power programs--along with developing the machine-building and chemical industries of the national economy and developing the

production of consumer goods and services should be improved to the utmost. This requires the even greater integration of sectorial statistics for the purpose of comprehensive research on economic processes.

Also needed is serious preparation for the organization of operations on the statistical observance of the course of realization of the Comprehensive Program of Scientific and Technical Progress of the CEMA Member Nations to the year 2000.

A most topical problem is the study of questions of intensification and raising the efficiency of industrial production based on scientific and technical progress. This problem should be resolved in all of its facets. Especial attention in this should be devoted to technical re-equipping and reconstruction, investment policy and capital construction, improving the utilization of productive potential and to intersectorial and intrasectorial proportions.

It is necessary to study and analyze the technical level and quality of machine-building products and the development of machine building as the foundation of scientific and technical progress. New is the task of studying the development of the building-materials complex and the fuel-and-power complex as a unified whole.

Important tasks in statistical research and analysis are before the statistical organs with regard to the execution in practice of modern agrarian policy and the implementation of the USSR Food Program, as well as the creation of the USSR Gosargoprom [State Agro-Industrial] System.

The 27th Congress emphasized that investment policy and capital construction are effective tools of party economic strategy. It is necessary to note that a number of important questions in the analysis of capital-construction problems are still without proper attention. Strengthening the analysis of sectorial and reproductive structures of capital investment and its territorial breakdown is essential. The study of disproportions arising in the course of the fulfillment of plan targets must be deepened, and the systematic study of the technical and economic level of enterprises planned and under construction should be undertaken. Such factors of intensification in construction production as its industrialization, improving the forms and methods of labor organization, and disseminating the experience of innovators and progressives of production should be studied comprehensively.

Under the conditions of the acceleration of scientific and technical progress and the intensification of the economy, the statistics of finances and pricing should be developed to the utmost, which, unfortunately, still do not fully meet modern requirements. There are a number of unresolved issues in its organization--a systematic approach to the analysis of the influence of financial controls and incentives on raising the efficiency of production is not provided, and sometimes analysis is limited by the evaluation of the degree of fulfillment of plan targets. Under modern conditions of economic and statistical analysis of financial indicators, the effect of the observance

of contract obligations, the fulfillment of plans for cost and quality of product output, and the reduction of non-productive expenses and losses on profit indicators should be revealed.

The analysis of social development and increasing public welfare, the course of implementation of measures for improving the qualitative conditions of the life and activity of the Soviet people, the resolution of the task of fully satisfying the growing effective demand of the population and the realization of the Comprehensive Program for the Production of Consumer Goods and Services becomes most important.

Issues in statistically observing the improvement of economic administration and analyzing the development of this system and the interaction of planning, economic controls and incentives in it should especially be singled out.

With regard to improving the analysis of statistical data, the question arises of further developing and improving statistical methodology. The task was posed in the Fundamental Areas of raising the level of theoretical research in the sphere of the social sciences. In this regard, a number of problems must be cited that are currently the most topical for the further development of the theory and practice of state statistics. That is, first and foremost, the problem, connected with the scientific organization of a system of accounting and reporting in the national economy, of obtaining high-quality and operative information at all levels of management.

A number of theoretical questions in the system of statistical indicators, the organization of surveys, collection techniques and the processing and analysis of information with the application of econometric methods and computers are in need of further development. Statistical practice in a number of cases has far outstripped the old traditional methods that are presented in our textbooks of statistical theory.

Questions of improving the system of indicators for evaluating the economic activity of enterprises were expressed at the 27th CPSU Congress. The application of volumetric cost indicators of gross, commodity and sold products for evaluating the results of economic activity were criticized in particular. In this regard, the development of a scientifically based system of indicators for evaluating the results of the economic activity of individual enterprises and labor collectives is extremely topical.

Much scientific methodological work is currently being conducted with regard to the upcoming All-Union Population Census of 1989. The task today is, first and foremost, to successfully conduct a test census of the population, to verify carefully all the conditions of a basic census in it, develop a program, test the results-tabulation technology and carefully prepare crucial employees.

The resolution of the task of raising the quality of statistical information and economic work should be implemented within the framework of the ASGS, which will be further developed in the 12th Five-Year Plan and the period to the year 2000. The principal key areas of development of this system are:

- reducing the time periods and raising the quality of composite reporting based on the incorporation of integrated information processing within the framework of functional subsystems with the broad-scale utilization of ABD [probably Automated Date Banks] and modern means of communication, and improving the information flows in the state statistical system and their interaction with the OASU data bases;

- developing the base of a computer system and increasing its efficiency, technically re-equipping the rayon level and increasing labor mechanization for the employees of state statistical organs;

- improving the administration, planning and management mechanism of the USSR CSA computer network.

With regard to the improvement of the computer system, the work of VNIPIucheta [All-Union Scientific Research and Planning Institute of Accounting] should be reconstructed in the spirit of modern requirements, the quality of standard plans and the time periods for their development should be improved and the cost of operations reduced.

The resolution of the new tasks before the state statistical organs will depend completely upon the quality of work with personnel. Shifts in the work with personnel in the system were planned recently, their qualitative makeup was improved, responsibility in work was increased and turnover was reduced overall. It is still premature to speak of successes today, however.

Many shortcomings in work with personnel remain in the CSAs of the Turkmen, Kirghiz, Azerbaijan, Tajik, Uzbek, Belorussian and Estonian SSRs, where considerable turnover is observed along with errors in selection and placement and the slackening of work with them. Permissiveness and a lack of control at several union-republic CSAs and statistical administrations led to instances of the abuse of service positions and amoral acts on the part of individual responsible employees.

A difficult situation with personnel has taken shape at the rayon level of state statistics, to which proper attention was not devoted for many years. The continuous growth in the need for economic information at that level was not reinforced with the necessary mechanization of reporting development, the outfitting with computer and calculating equipment and the improvement of labor conditions and wages.

The structure of the oblast and republic level of state statistics and the central apparatus of USSR CSA requires improvement.

The managers of a number of republic CSAs and many statistical administrations are not taking proper steps for improving the working and living conditions of employees.

There is ever more formalism in the organization of training in courses for raising qualifications and in the system of economic education. Classes are often conducted out of touch with the practical tasks of state statistical organs for improving accounting and reporting and deepening the comprehensive

analysis, auditing and presentation of reliable statistical data and the mechanization of the development and output of economic information.

The 27th CPSU Congress indicated the necessity of strengthening work with personnel. The "human factor" should be of paramount importance, including the whole range of work with people: selection, placement, training, the creation of essential working and living conditions and the formation of the appropriate moral and psychological climate in labor collectives.

It is necessary to increase the sense of personal responsibility of employees of all ranks, executive discipline, self-discipline, to make personal demand for the fulfillment of service obligations more strict and to resolve in principle whether the person corresponds to the duties held. It is important to bring people, especially managers, into the zone of collective publicity with a more principled evaluation of their work and the broader development of criticism and self-criticism.

Such are the next tasks in the most important areas of work. For their successful resolution, it is important to reinforce the atmosphere in party organizations and in every labor collective, created by the congress, of party principle, criticism and self-criticism, high exactingness toward personnel for matters entrusted to them and the timely discovery and elimination of shortcomings and omissions.

As was emphasized at the 13 Mar 86 session of the CPSU Central Committee Politburo, it is important that every communist and every Soviet person be actively included in the practical work on implementing the plans projected by the party.

It is essential that the consistent and undeviating realization in practice of the Resolution of the 27th CPSU Congress, the directives of the Political Report of the Central Committee to the party congress and the provisions of the party Program and Charter and the Fundamental Areas of Economic and Social Development of the USSR for 1986-90 and for the Period to the Year 2000 become a standard of life for all Soviet statisticians.

Conference Participants Cite Problems

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[Article by V. Knyazev, Moscow: "At the USSR and Union-Republic CSAs [Central Statistical Administrations]: Statistics--To a Qualitatively New Level"]

[Text] A conference was held in February of this year at USSR CSA on the issue of improving accounting and reporting in the national economy. The chiefs and deputy chiefs of union-republic CSAs, administration and department managers of USSR CSA and organizations subordinate to USSR CSA, and representatives of public USSR CSA organizations were invited to the conference. Responsible officials of the CPSU Central Committee took part in the work of the conference.

Opening the conference, USSR CSA Chief M. A. Korolev stated that those deep and radical changes that are taking place in the management mechanism and in the administrative system require a qualitatively new approach to the organization of statistics and the improvement of primary accounting. The task consists of turning statistics into a highly efficient management tool, substantially reducing and simplifying reporting, and increasing the analyticity of statistical information.

Complaints against statistics are justified. A fallacious practice has arisen in the national economy where reporting is collected in the most multifaceted breakdowns and at different times according to any request and which overload the managers of enterprises and scientific and technical personnel, distract from the basic activity and take up communications channels, which inflicts great harm on the national economy. This relates both to local management organs and to the ministries, scientific research organizations and science centers that exist in various sectors of the national economy, along with many other organizations. As a result, differing results, making the adoption of the correct solution more difficult, are shown according to one and the same phenomenon. The volume of reporting has become extremely great, which also has a negative effect on the administrative system of the national economy.

USSR CSA and its local organs, in essence, are not truly occupied with these problems. It is necessary to wage the struggle against such phenomena more actively and aggressively, employing society, the press, radio and television more broadly for this. Until recently, insufficient attention has been devoted to sectorial ASU [management automation systems], along whose lines a large volume of information is collected.

We must, continued M. A. Korolev, adopt most decisive measures for eradicating all excesses in information and introduce state order in this matter. The statistical organs should make full use of the many rights granted to them.

USSR CSA Deputy Chief I. A. Pogosov spoke on improving accounting and reporting in the national economy. An account of the speech is given below.

Improving the management mechanism, strengthening the role of economic methods of administration, and reinforcing the cost-accounting basis at all levels of the economic complex--all of this considerably increases the need for reporting and strengthens the role of statistical information in the administrative process.

At the same time, there are currently serious shortcomings in the organization of statistical reporting in the national economy. The employees of associations, enterprises and organizations are extremely overloaded with the formulation of various types of reports, multitudinous inquiries, and the preparation of the most varied information instead of being occupied with their immediate work.

As auditing conducted by the USSR Committee on People's Control has shown, information on the output of 740 types of products and 500 denominations of articles cooperatively supplied (316 and 130 denominations respectively are coordinated with USSR CSA) is sent to the OASU [sectorial ASU] every day by

the enterprises of USSR Minselkhozmash [Ministry of Tractor and Agricultural Machine Building]. The data received on 17 forms coordinated with USSR CSA and are not summarized or used by anyone. The Minsk Tractor Plant presents five times more information than stipulated by state reporting. The Kharkov Tractor Plant of Minselkhozmash presents, over the course of a year, data on 534 forms to the organs of CSA, the ministry, the VPO [all-union production association] and other organizations, the Alma-Ata Porshen Plant imeni 23rd CPSU Congress uses 361 forms, the Kharkov Serp i Molot Motor-Building Association reports on 182 extra forms, the Tatarsk Garment-Sewing Association of RSFSR Minlegprom [Ministry of Light Industry] uses 224 forms etc.

The computer center of USSR Minkhimprom [Ministry of the Chemical Industry] collects information on 34 reporting forms (USSR CSA has approved 19). Reporting not approved by USSR CSA exceeds the state level by 5.5 times for eight USSR Mintyazhstroy [Ministry of Construction of Heavy Industry Enterprises] enterprises. The Kommunarka State Livestock Farm of Moscow Oblast reports using 197 forms with 123,000 indicators calculated over a year, of which almost 100,000 comprise illegal reporting. At the Kharkov Poultry Plant, the established level of reporting consists of 16,700 indicators and 8 times more extra ones.

Over the last four years, the volume of state reporting for USSR Minlegprom, USSR Minkhimprom, USSR Minselkhozmash and USSR Mintyazhstroy has grown considerably.

The flow of information has increased sharply since the creation of sectorial management automation systems (OASUs).

Serious shortcomings also exist in existing statistical reporting--there are great excesses, and many indicators are duplicative and are not applied in planning and administration. And even though the state statistical organs are conducting work on improving the reporting collected and developed both by statistical organs and by ministries and departments, it is in acute need of reduction, simplification and increased analyticity. It is necessary to review critically, in particular, the expediency of the annual composition of reports on the number and makeup of the employees of the administrative apparatus, the conducting of a census of fuel remainders three times a year, and the presentation of a special reporting form for the economic activity of an enterprise according to production, labor productivity, fixed capital and others. Not all union-republic CSAs and local statistical organs have become aware of the significance of this work. Thus, in 1985 the CSA of the Turkmen SSR not only did not reduce reporting, but even increased it, and the volume of reporting in the CSA of the Armenian SSR remained unchanged.

In order for statistical reporting to meet the requirements of the modern day, work on its improvement in the current year should be made substantially more active and conducted in a more organized manner. Three areas can be singled out in all of this work.

The first is the reduction of reporting approved by the USSR CSA and the CSAs of union republics, including the nationwide minimum of indicators for the union republics.

The second area is a considerable reduction in reporting collected along the lines of sectorial management automation systems (OASU). By volume it exceeds existing statistical reporting by many times.

The third area is the discovery and elimination of reporting forms that are not approved by established procedure, that is, illegal reporting.

In the first area, much work must be done in parallel with the statistical organs by USSR Minfin [Ministry of Finance] in the area of bookkeeping reporting, by USSR Gosbank [State Bank] and Stroybank [Construction Bank] on their reporting forms, and by other central economic departments.

This work is difficult and requires a thoughtful a responsible approach to every reporting form, whether it is collected through ministerial and departmental lines or by USSR CSA.

A large group of issues is associated with the interaction of the USSR CSA computer network and the whole CSA system with the sectorial management automation systems. The duplication of reporting should be eliminated here, and the possibility and expediency of concentrating the development of individual reporting forms either in the CSA system or along ministry and departmental lines should be studied carefully. The times for the receipt of summary data by ministry, the volumes of work, the existence of capacity in the USSR CSA computer network, and the possibilities for ensuring all necessary breakdowns of the developments--sectorial, territorial, by subordination--should be taken into account in this.

In reviewing the makeup of the information collected along OASU channels, the state statistical organs should be guided by party indications of the necessity of overcoming the practice of interference by the center in the operational activity of lower economic levels.

And of course, we are obligated to adopt most decisive measures for the full elimination of illegal reporting. In this regard, the statistical organs must utilize more broadly those rights that are stipulated by the USSR CSA Statute. On the other hand, it seems that the responsibility of those managers who require the presentation of such reporting should be tightened.

The statistical organs must study (and such work is being conducted) how existing reporting is being utilized in ministries, departments and industrial associations, including that collected by sectorial management automation system. Analogous work will be conducted at enterprises and organizations.

The formulation of the composition and volume of statistical information and the procedure for its collection, processing and presentation with regard to the creation of the Gosagroprom [State Agro-Industry] and the abolition of individual ministries presents well-known difficulties.

A number of tasks for state statistical organs arise with regard to changing the administrative structure of industrial ministries, eliminating several industrial associations, creating main administrations and reducing the number of administrative layers.

A major independent problem is the adjustment and improvement of primary accounting with the aim of introducing order and reducing the volume of documentation circulating within the industrial enterprise or organization. The state statistical organs have still not achieved the proper procedure here. It is necessary to make this work more active and to increase substantially the exacting attitude toward the ministries. We justifiably also expect a large contribution to the improvement of primary accounting from the VNIPIucheta [All-Union Scientific Research and Planning Institute of Accounting] of USSR CSA.

It is apparent that the effectiveness of all of this work and its results are closely tied to the necessary expansion of the rights of USSR CSA, the CSAs of union republics and local statistical organs. These questions are already resolved. The problems of the reduction and simplification of reporting, the objectivity of information, and the introduction of order in this matter will be constantly in the field of view not only of USSR CSA, but of a number of departments, and in particular the Committee of People's Control. Therefore, statistical organs at all levels will have to coordinate their work with the appropriate control organs, said I. A. Pogosov in conclusion.

Latvian SSR CSA Chief G. A. Baltin indicated the significance of the work on reducing and simplifying accounting and reporting in the national economy. The measures carried out up to now have not produced an appreciable reduction in the volume of accounting and reporting directly at the enterprises. The point is that we have moved along the path of lengthening the frequency of reporting and eliminating some plan indicators and certain indicators over the corresponding period of last year. Primary accounting remained unchanged at the enterprises.

The volume of statistical information passing only through the departments for preparation and issue to the computer center (without taking any inquiries or analytical or auditing work into account) increased by 1.7 times over the 10th Five-Year Plan and by 1.6 times over the 11th. Of course, this is partially explained by the introduction of a whole series of new indicators, as well as an increase in the volume of work associated with the development of many additional indicators for organizations and enterprises transferred to new management conditions. A number of indicators were introduced to improve information on the intensification process, that is, proceeding from the new tasks placed before the economy. And although this met requirements, at the same time many indicators were introduced that were insufficiently grounded (for example, the production of consumer goods per ruble of wage fund).

The task of reducing reporting is closely linked with reducing plan indicators, since the expansion of statistical reporting in the 10th and 11th Five-Year Plans was facilitated to a considerable extent by an increase in the quantity of plan indicators.

Reporting on scientific and technical progress is in need of serious review. Even here, however, we are constrained by the system of plan indicators.

The question of reducing the amount of information collected in sectorial ASU channels is justly posed. There is much illegal reporting here along with many one-time requests, the volume of which is many times greater than statistical reporting approved in established procedure. But it impossible not to take into consideration the fact that information can be presented via ASU more effectively than via statistics.

The speaker pointed out that much information is collected by ministries and departments "just in case," so as to always have it on hand.

RSFSR CSA Chief P. F. Guzhvin emphasized that the question raised for discussion is most important in the matter of improving all of state statistics. The place and role of statistics in the administrative system of the whole economy depends greatly on its successful resolution. The task of reducing reporting is as crucial as it is complex. It requires maximum effort, persistence and principle from the whole system. Initiatives in this regard can hardly be expected from the ministries.

At meetings, the representatives of ministries and departments willingly agree on the need to reduce reporting, but when the matter moves to the specific resolution of an issue, enthusiasm is extinguished on the spot. And sometimes there is not enough persistence and aggressiveness here.

The struggle against illegal reporting also requires great energy.

The ongoing process in our country today of improving the management mechanism and moving to economic administrative controls with the granting of broad independence to enterprises and organizations makes necessary a serious increase in the effectiveness of statistics. And the speaker expressed confidence that excesses in reporting will be eliminated under these conditions, but not through a reduction in requirements for its improvement.

P. F. Guzhvin further proposed a review of the question of the so-called "pyramid" in statistical information. In the rayon and oblast it should be more extensive--for operational management; in the republics and higher--only that which is necessary for the development of directions in principle for this or that process. The discussion, in the end result, concerns the elimination of the petty dictate "from above," which is fully in accordance with party policy for the utmost development of initiative and entrepreneurism at enterprises and organizations.

Dwelling on the question of primary accounting, the speaker expressed the opinion that many abuses could be avoided through well-organized accounting at enterprises and organizations. First and foremost it is necessary to increase the responsibility of ministries and departments for this. He noted at the same time that the statistical organs of the Russian Federation have not conducted appropriate work in this area.

Georgian SSR CSA Chief R. V. Basariya pointed out in his speech that a large volume of reporting not approved in established procedure is requested not only by the republic ministries and departments, but also by the Georgian Council of Ministers. After reprimands by USSR CSA, the collection of this information was officially halted, but it continues to be presented unofficially. Apparently, existing statistical reporting does not fully meet the requirements of the modern level of economic management.

The collection and development of various types of information at the rayon level of state statistics is extremely overloaded, where in a number of cases a total of 3-4 people are working.

In our opinion, said R. V. Basariya, there should be a subdivision of territorial statistics at the USSR CSA and union-republic CSA level, which would regulate the volume, time periods, content of requests, and one-time inquiries. This would make it possible to reduce the volume of information and eliminate its existing duplication. Undoubtedly, the practice of establishing departmental reporting is also in need of correction.

Kazakh SSR CSA Chief T. Zh. Zhumasultanov dwelled on specific proposals for improving statistical reporting (reporting by type of labor, operational reporting by agriculture, major inquiries etc.). He proposed expansion of the practice of selective surveys in place of the existing mass inquiries.

The speaker devoted much attention to the question of changing the frequency of existing statistical reporting.

Armenian SSR CSA Chief S. G. Mutafyan emphasized the necessity of urgently making more active the work on improving statistical reporting. Acknowledging the great responsibility of state statistical organs for this work, we understand, he said, that much will depend on reconstructing the work style and methods of ministries and departments. The experience of Armenia has much significance in this plane, in our view, where a republic management automation system is being created on the basis of the computer centers of the republic, including the computer center of Armenian SSR Gosplan. The chief client here is the Armenian CSA.

Belorussian SSR CSA Chief V. N. Nichiporovich noted that until recently, work on improving statistics was clearly insufficient, and was sometimes conducted in a formalistic manner. Today we have made this work much more active.

We receive much support and assistance from the Central Committee of the Belorussian Communist Party. The question of the state of accounting and reporting and their excesses is projected for review at a party Central Committee Buro session to which the managers of ministries who have not abolished illegal reporting are invited.

In order to discover more fully the state of accounting and reporting, our specialists visited all oblasts as part of the teams headed by party Central Committee and republic Council of Ministers employees. These materials are now being summarized and will be presented to directive republic organs.

The speaker noted serious shortcomings in individual reports on material and technical supply and scientific and technical progress, and indicated the cumbersome nature of reporting on the environment and others.

V. N. Nichiporovich further dwelled on the widespread distribution of sectorial ASUs and automated systems of planning calculations [ASPR]. They have in fact become the chief centers for the collection of illegal reporting. The matter is becoming absurd. Daily data is required of the CSA, for example, on the average daily weight gain of livestock and the like. And what cannot be obtained through statistical channels is obtained from the enterprises through the OASUs and ASPRs.

Ukrainian SSR CSA Deputy Chief A. A. Zhuk stated that the problem of improving statistics encompasses a broad range of issues. Along with the reduction and simplification of statistical information, it is also the adjustment of primary accounting and the struggle against distortions and corruptions of report data. As concerns primary accounting, the question is complicated first and foremost with regard to the shortcomings of personnel and the low level of qualification of accounting employees. Sometimes this is the principal reason for distortions in reporting. When speaking of distortions, the role of the organs of the USSR Procuracy should be increased substantially. The task of statistical organs is to discover instances of distortion and formulate the case, and its further progression is the prerogative of investigative agencies.

The efficacy of the struggle against distortions depends greatly on the principled nature of the managers of the ministries, departments, main administrations, enterprises and organizations where such instances are established. For example, we conducted a comprehensive audit of Glavkievgorstroy [Kiev Urban Construction Main Administration], and serious shortcomings in reporting were discovered. The audit materials were reviewed at an expanded collegium of that main administration. The guilty parties (and among them were the chiefs of trusts and construction administrations) were deprived of their semi-annual bonus, the 13th wage, and two were removed from their posts.

Not all managers, however, manifest such a principled nature (as the management of the cited main administration) in questions of the reliability of report data.

Rayon management organs sometimes request the most diverse information that exists in statistical reporting. Undoubtedly, the effect of our work on improving statistics and the introduction of the proper state order in this matter is closely connected with expanding the rights of state statistical organs.

In his report, Moldavian SSR CSA Deputy Chief I. P. Yurash emphasized that questions of improving state statistics require in the first place new approaches and changes in work style and methods.

An important reserve for reducing existing reporting is lengthening its frequency, eliminating the duplication of one and the same indicators in

various forms of sectorial statistics, and abolishing mail reporting when there is a telegraph available. The quantity of statistical surveys conducted by individual sectorial statisticians requires reduction and considerable simplification.

The existing flow of departmental information, the speaker stated further, is in essence uncontrollable. In the Statutes of any ministry, and correspondingly at the rayon level, it is entered that it (the ministry) has the right to require reports concerning the activity of its enterprises.

With the aim of eliminating illegal reporting, continued I. P. Yurash, personal responsibility should be placed on the managers of ministries and departments for the state of accounting and reporting and the reliability of information presented by their subordinate enterprises and organizations.

There is another serious issue here. The ministries and other organs are collecting information and processing it more efficiently than is being done by the state statistical organs, even though the latter are not violating plan schedules. This is caused by the better technical equipping of the sectorial automation systems.

B. P. Plyshevskiy, a sector chief of the Economic Department of the CPSU Central Committee, indicated the political significance of the work on improving accounting and reporting in the national economy. It is being inserted into the general system of measures that are being implemented in accordance with the resolutions of the April (1985) Plenum of the party Central Committee on accelerating the social and economic development of the country and the CPSU Central Committee conference on issues of accelerating scientific and technical progress, and with the resolutions of general tasks in improving the administration of the Soviet economy.

All of the questions discussed should be reviewed in detail in local areas and in the collegia of union-republic CSAs, statistical administrations and production conferences. It is essential to emphasize especially the political aspect of the matter and to orient the staff members of statistical organs toward an understanding of the significance of this work in the implementation of party policy.

Improving statistics and liberating enterprises, organizations and superior administrative organs from excess reporting and paper generation is an important condition for reconstructing work style and methods in accordance with the policy for strengthening centralized management and economic methods in the activity of union, republic and oblast organizations, with the simultaneous expansion of the rights and increase of the responsibilities of the primary production level--associations and enterprises.

The experience of the Belorussian CSA, which demonstrated initiative in the preparation and formulation of the appropriate questions to the republic party Central Committee, merits attention. It would be expedient if statistical organs in the local areas took a more active role in party-committee reviewing and the practice of management and organizational party work of ministries, associations and enterprises and posed and elucidated questions concerning

improving the utilization of statistical information by them: determining the required volume, increasing its reliability, struggling against illegal reporting and reducing the scope of reporting.

The party committees of statistical organs at all levels must be drawn in more broadly to the improvement of statistics. And all of this work, of course, must receive broad publicity and should be regularly covered in the pages of the press and on radio and television.

Summing up the results of the exchange of opinions that took place, USSR CSA Chief M. A. Korolev emphasized the value of the proposals and desires mentioned. The resolution of a whole series of issues, he stated, is within the ability of USSR CSA--in particular, the question of instructions. It was already reviewed at a USSR CSA collegium, and a resolution was adopted, not to approve a single new form for reporting without instructions for its composition.

It is planned to discuss the question of EOI [expansion unknown] complexes at a collegium in the near future, so as to develop a general direction for their development for both sectorial statistics and for various territorial levels.

M. A. Korolev further dwelled on the problems of the rayon level of state statistics, which many speakers discussed. A complicated situation has really taken shape in the rayons--a poor material base, a mixed nature of technical equipment, an acute necessity for the modernization of equipment etc. USSR CSA, however, cannot resolve these problems with its own resources. A development program for the rayon level of state statistics for the period to the year 2000 is currently being developed.

The question of formulating statistical information for the agro-industrial complex requires the most rapid resolution. It is necessary to develop a clear line for the interrelationhips of the rayon level of state statistics with the rayon agro-industrial associations. As regards the centralization of reporting in statistical organs, it is only possible with a substantial strengthening of the technical base in the rayon.

We must accelerate the resolution of the lingering question of Soyuzuchetizdat [All-Union Accounting Publishing] toward which many complaints were expressed.

Overall, said M. A. Korolev in conclusion, we have much painstaking work to do so as to raise statistics to a qualitatively new level in accordance with the high requirements of the modern day, and transform it into an effective tool of administration of the national economy.

At the Commissions of the Scientific Methodological Council of USSR CSA

In accordance with the work plan of the Scientific Methodological Council, a technique for the comprehensive analysis of social production at the national-economic level, presented by Candidate of Economic Sciences K. Chobanu, laboratory chief of the NII [scientific research institute] of USSR CSA, was reviewed at a session of the Commission on Economic Balance and Intersectorial Contacts chaired by Professor M. Eydelman.

The aim of the research is the development of general methodological positions and tools for the comprehensive analysis of statistical data that thoroughly characterize social production at the macroeconomic level and take into account the existing interconnections and interdependencies that allow the combination of the factors and results of production into a unified system.

The technique of comprehensive analysis includes the aggregate of the indicators and the methodology of their calculation, the information supply of data of indicators and the method of statistical analysis, deemed typical of the results and stages of reproduction of social product in the organic connection with the most topical aspects of the development of social production.

Problems in the automation of bookkeeping, presented by Candidate of Economic Sciences I. Babynin, director of the VNIPIucheta of USSR CSA, were discussed at a session of the Commission on Automated State Statistical Systems chaired by Professor N. Belov.

The VNIPIucheta of USSR CSA has been entrusted with the function of lead organization in the methodology, mechanization and automation of accounting and reporting in the national economy. Therefore, basic problems in the realization of the tasks placed before the institute were submitted for discussion.

1. Conducting scientific research work on the creation of methodological materials for the automation of bookkeeping.

2. Conducting scientific research and planning work on the creation of a complex of intersectorial and sectorial standard planning solutions and programming equipment for bookkeeping with the application of econometric methods and modern computer equipment.

3. Conducting scientific research and planning work on the creation of progressive technology for processing accounting and economic data with the application of automated workstations, created on the basis of microprocessor technology and modern means of data communication and transmission.

4. Researching and developing the scientific bases of the creation of computer-aided design for the development, connection and incorporation of intersectorial and sectorial standard plans for the automation of bookkeeping.

5. Conducting scientific research work in the sphere of primary accounting and the planning of standard interdepartmental and sectorial primary accounting documentation that satisfies the requirements of computer processing.

6. Creating and conducting an intersectorial fund of algorithms and programs for the Bookkeeping subsystem.

7. Studying topical problems in the mechanization and automation of dccounting and reporting in socialist and capitalist countries.

The realization of these problems will greatly facilitate improving the organization of bookkeeping in the national economy, strengthening the control functions of accounting and ensuring the rational and economical utilization of material, labor and financial resources, as well as increasing the role of bookkeeping specialists in implementing control over the preservation of socialist property, the analysis of management activity and the assurance of the reliability of report data under conditions of the intensification of production.

A plan for a technique for determining the economic efficiency of expenditures to protect the environment by productive enterprises, presented by Senior Scientific Staff Member G. Romanova of the NII of USSR CSA, was reviewed at a session of the Commission on Industrial Statistics chaired by Professor V. Adamov.

Much success has been achieved in recent years in the area of protecting the environment, but there are shortcomings that exist in the utilization of funds allotted for this purpose which did not permit the achievement of a substantial improvement in the state of the environment.

State control of how effectively funds allotted for the preservation of nature are expended is acquiring particular importance. In order to conduct in practice a flexible policy of capital investment in accordance with the existing ecological situation, it is necessary to contribute funds with a regard for obtaining the highest return and monitor conservation work at enterprises, and the administrative organs are in need of sufficiently simple and effective methods of evaluating the efficiency of conservation expenditures.

Systematic indications of the calculation of the amount and share of the sectors of the agro-industrial complexes of the union republics in the gross social product, material expenditures and national income and in the fixed productive capital of the national economy were discussed at a joint session of the Commission of Statistics of the Agro-Industrial Complex and Economic Balance and Intersectorial Contacts chaired by Academician S. Sergeyev of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V. I. Lenin]. The speaker was Candidate of Economic Sciences B. Ryabushkin, chief of the Balances of the National Economy Administration of USSR CSA.

The development of the agro-industrial complexes [APK] of the country is currently characterized by a system of indicators in two aspects: in the sectorial--according to the list of sectors and types of activity related to the APK regardless of the departmental affiliation of the enterprise or organization, and in the departmental--according to the list of ministries and departments, as well as according to ministries and departments providing the funds for agricultural production, the processing sectors and the sale of food commodities.

Recommendations to calculate the gross and net production and fixed productive capital of the APKs at the republic level in a sectorial breakdown were part of the technique presented.

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